MARCH
1953

Route this to:

Tribute to

HARRY McCORMACK

CHEMICAL PROCESSING'S Technical Editorial Director this month receives recognition for more than 50 years of outstanding service to chemical industry

see page 6

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Creators of PUTMAN-STYLE Magazines . . . terse, vital editorial; "hand-picked" circulation; square, high-visibility format; quality readership; hence more READER ACTION

for men who manage

CHEMICAL PROCESSING

Highlights

of This Issue

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HARRY McCORMACK—
his half-century of service

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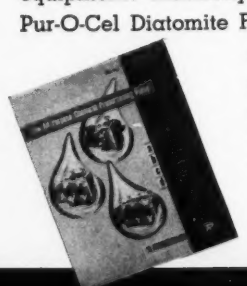

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"That's Interesting"

Medicated alarm clock

A tablet has been formulated by Central Pharmacal Co., Seymour, Ind., which has all of the characteristics of an alarm clock — minus the ticking. Somnadex has a layer of pentobarbital to induce sleep; a layer of butabarbital sodium to maintain sleep; and a core of the stimulant desoxyephedrine which will wake the sleeper in approximately eight hours.

Reading temperatures at a distance

The Metameter Telemeter is a device manufactured by The Bristol Co., Waterbury, Conn., for taking remote readings of atmospheric temperature from any distance up to and beyond 100 miles. Temperatures are conveyed over telephone wires by a transmitter to a recorder chart which tells what the temperature is at the remote point, what it has been for the past several hours, and its trend.

Cold Welding

Although few applications have been made as yet, a method of welding aluminum at room temperature has recently been accomplished in England. The process is suitable for other metals including copper and uses no heat from any source. By proper arrangement of workpieces and dies, sufficient pressure is applied to cause the ductile metals to flow at room temperature, bringing the work surfaces into intimate contact so that a genuine weld is made. (Reynolds Metals Co., 2015 S. Ninth St., Louisville, Ky.)

Electronic interpreter

Experiments conducted at the Massachusetts Institute of Technology indicate that the use of automatic computers for language translation is not as remote as it may sound.

One possible pattern for the electronic interpreter utilizes a scanner (similar to one used in a television camera) to distinguish printed letters of the foreign language and send messages to the memory unit. The latter compares the impulses to its storehouse of foreign words; and eventually the translator converts to English equivalents and yields the basic translation from an electric typewriter. (American Chemical Society, New York 17, N. Y.)

For more information on product at left, specify CP 8182 . . . see information request blank between pages 2 - 3.

"That's Interesting"

Nosing in on the long distance telephone lines

Efficient performance requires that most telephone toll or long distance cables be filled with nitrogen or air under pressure and then sealed in order to exclude moisture and assure an inert atmosphere for the maze of wires within the cables. Since leakage in the lines might easily impair telephone service, Western Electric adapted the General Electric leak detector to their particular service.

In operation, Du Pont's "Freon-12" fluorinated hydrocarbon is pumped into the cable to displace the nitrogen or air; and the electronic tester is pulled along the cable like a monorail car. When the device sniffs the escaping "Freon-12", a signal is transmitted to the ground crew and repairs are made quickly and surely.

A previous method of detecting telephone cable leaks involved painting the cable with a soap solution so gas escaping through a defect would show up as bubbles. Presently, the electronic device moves along at the money-saving rate of about 120 feet per minute. (E. I. du Pont de Nemours & Co., Wilmington, Del.)

Evacuated rubber bag is hard as a rock

Flexible rubber bags that harden instantly when evacuated by vacuum pump are being used in medical treatments to quickly immobilize various portions of the body. The Flexi-Cast is filled with fine-grained plastic granules and can be adjusted to fit around any part of the human body or all of it. It becomes very rigid when all of the air is evacuated and malleable, like putty, when only part of the air is removed. Manufactured by Dewey and Almy Chemical Co., Cambridge, Mass., the rubber bag may also be used as a mold to make impressions of the face, head, or other parts of the body.

Catalyst caps boost battery life

Automobile storage batteries should last longer as a result of the recently invented catalyst filler caps which eliminate loss of battery fluid by converting escaping hydrogen and oxygen gases back into water. Introduced by Hester Battery Mfg. Co., Nashville, Tenn., the battery caps are said to make battery water last more than seven times longer than normal: they also indicate battery overcharge (by heating to a point hot to the touch) as well as a dead cell (by remaining cold in contrast to heated condition of the other cell caps). No corroded battery posts or terminals and efficient operation at low specific gravity (1.250 compared to normal 1.290) of the sulfuric acid are additional benefits reported to be derived from the catalyst caps.

Please pass the condensate

Getting more production from steam heated equipment is the ultimate aim of a 20-minute color and sound film on the subject of up-to-date steam trapping. "Please Pass the Condensate" portrays the operation, selection, application, and maintenance of steam traps with the view to gaining production by increasing operating temperature and decreasing heat-up time as well as down-time for repairs and cleaning. Film is distributed by Yarnall-Waring Co., Philadelphia 18, Pa.

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In this Issue

from acrylonitrile to zirconium

Even to the most casual observer, the expansion and importance of the chemical industry is perhaps most readily apparent in the field of chemical raw materials and specialty chemical products. Here products are developed and offered to industry which have caused and will continue to suggest major changes in processing techniques and product improvement.

A survey of recent developments announced in this field would necessarily include acrylonitrile, numerous substituted amines, alkyd resins — both modified and unmodified, several anti-static agents for use with synthetic fibers, fluorochemicals, epoxy resins, plasticizers, silicones, petrochemicals and many surface active agents. Without proceeding to much greater length, one could not hope to include all of these materials which have been significant contributions in this ever-enlarging and essential field.

In recent issues of CHEMICAL PROCESSING we have discussed many of these products and their possible applications in processing operations. Silicone resins for use in protective coatings, silicone gum, a useful dialkyl amide and several polychemicals have been given editorial treatment. In the current issue an intermediate which has been employed in protective coatings is introduced as a useful chemical raw material, page 22 of this issue.

Recent editorial field trips have provided us with additional ideas and information concerning products now in the development or pilot plant stage. Our inherent interest in the subject together with the professional experience of various manufacturers will provide the necessary background for preparation of articles dealing with these products.

One aspect of particular interest and significance concerns developments in silicone chemistry. This branch of chemistry might well be likened to the stature of the chemistry of carbon compounds in its potential influence and development. The products and applications of what might be called "inorganic" organic chemistry are already accepted as one of the most significant advances in the chemical field in recent years. Future issues will contain articles dealing with further developments in silicone chemistry and products.

Development and production of epoxy resins, peroxygen compounds and fluorocarbons pre-

(*Continued on page* 243)

G. Gilbert Mann

ASSISTANT EDITOR

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2. If you are looking for information on specific products, use the Product Directory "Quicklocator" for all types of materials, instruments, processing equipment, etc. This Product Directory lists everything in this issue, with page references 236

3. If you want to subscribe to this magazine, see reader-qualification form opposite page .. 3

CHEMICAL PROCESSING

(CHEMICAL PROCESSING PREVIEW)

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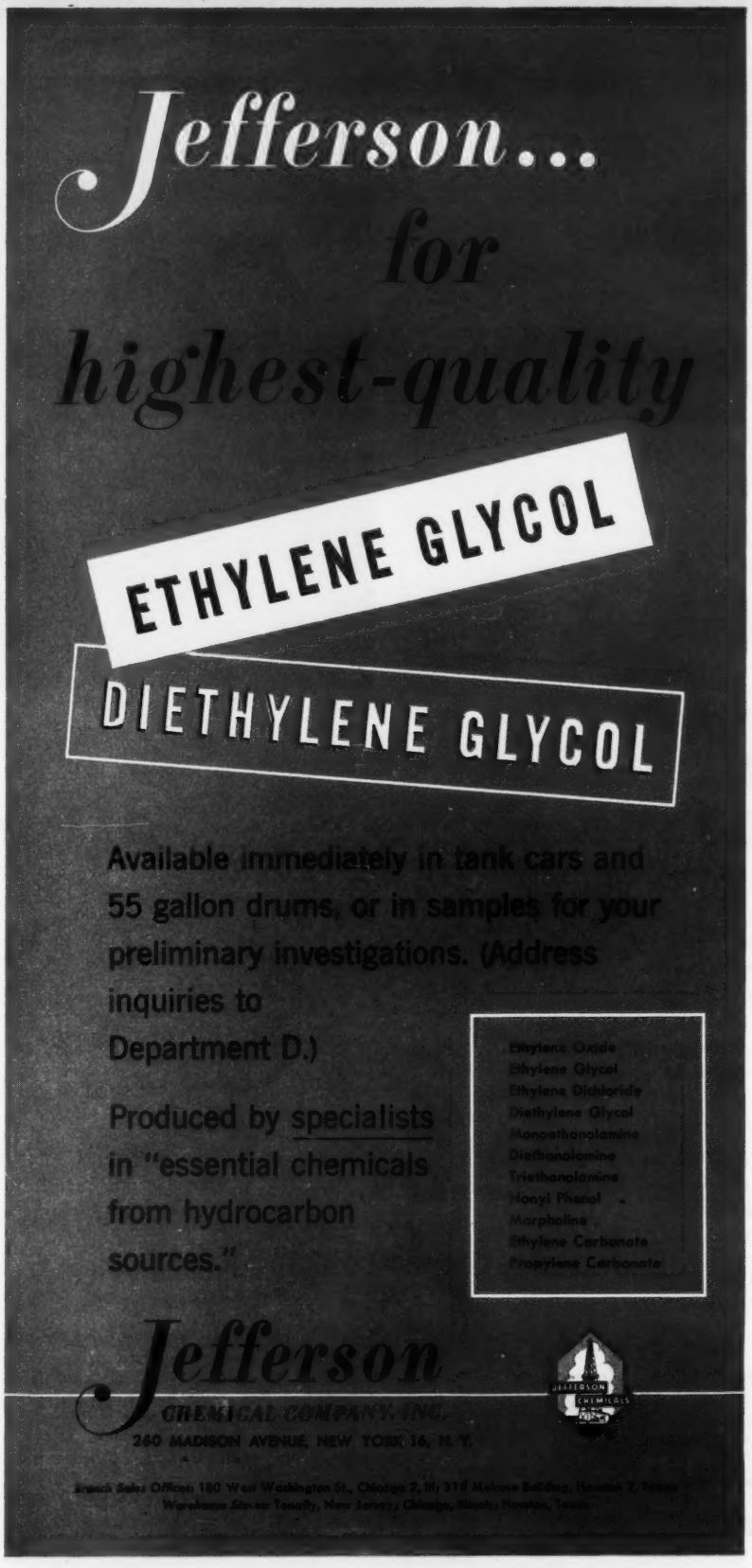

Briefs

From recent literature

No. 5 in a Series

Antifoam agents particularly useful in paper pulp or other fibrous suspensions may be prepared by emulsifying waxes in water using a soap of ricinoleic acid or castor oil, and a stearate or oleate of ethylene glycol or diethylene glycol. The diluted emulsion is added to the pulp so that there will be present from one-half to three parts of solid for each million parts of stock suspension.

Magnesium and aluminum castings can be made non-porous by impregnating with a mixture of styrene and a polyester. The polyester is formed by reacting ethylene glycol with maleic anhydride and tall oil at 190° to 200°C. The castings are coated with the mixture and then baked at 150° to 175° C under a pressure of 75 to 100 psi.

Surface coatings for wood, metal, and other materials are obtained by dispersing plasticized polyvinyl butyrate in ethylene glycol. These coatings may be colored with pigments and fillers. A uniform dispersion is obtained by grinding the mixture in a ball mill.

Varnishes for printing inks and paper coatings which are odorless, thermosetting, highly adhesive, water resistant and highly flexible when printed or coated on suitable bases can be produced using glyceryl phthalate in an ethylene glycol, diethylene glycol vehicle. They possess high water tolerance, are unaffected by humidity, and are suitable for use on high speed presses.

These developments are abstracted from recent publications or U. S. patents. They may suggest applications of Jefferson Ethylene Glycol and Diethylene Glycol in your products or processes.

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HARRY McCORMACK
Technical Editorial Director
Putman Publishing Co.

In Recognition of

More Than 50 Years of Service To Our Chemical Age

A Tribute to

HARRY McCORMACK

Creative Pioneer of our Chemical Age

SCHOLAR • ENGINEER • CONSULTANT • EDUCATOR • OPERATOR
RESEARCHER • DESIGNER • AUTHOR • EDITOR

To few men of this world is given the privilege of a half-century of pioneering in a chosen profession, of watching the industry of their choice take its first sturdy steps, of being a part of its growth to the greatest industry of this modern world.

This is the story of Harry McCormack . . . of a life packed full of action, progress, success . . . of a life almost as actively lived today as 50 years ago.

1899 . . . few persons then used the two words "chemical" and "engineer" to designate a man or a profession. Chemistry had not yet made its union with engineering. Harry McCormack began teaching that year, after earning his Master's degree in Chemistry at the University of Illinois.

1904 . . . he joined the staff of Illinois Institute of Technology (then Armour Institute of Technology). He took this opportunity to begin carrying out his idea that chemical engineering was an entity—*not* a miscellaneous combination of chemistry and engineering.

1908 . . . he headed, as Chairman, the recently founded Department of Chemical Engineering at Illinois Institute of Technology.

With the idea that no teacher was a good teacher unless he was familiar with applications of theory outside the classroom, his interest soon led him into conducting work with leading industrial firms. He went beyond mere consultation work, to take complete charge of processing operations—to prove in practice what he taught in the classroom. While doing this work, he held his position as head of Illinois Institute's Chemical Engineering Department for 38 years.

In industrial plants he studied and devised many new processes and techniques. He devised and operated the first spray drying process for tanning extracts; provided practical solutions for numerous industrial heat transfer problems; developed extraction and recovery methods for vanadium, uranium, and radium.

He was inventive. He holds numerous patents, ideas that are serving industry.

He was a leader in pioneering the unit operations and unit processes concepts in the laboratory. Later he edited and co-authored the book, "Applications of Chemical Engineering" on the subject.

1938 . . . he accepted responsibility as Technical Editor of the new publication, CHEMICAL PROCESSING, pioneering new ideas in serving the chemical processing field. In 1940, he added the responsibility as Technical Editor for FOOD PROCESSING, sister publication serving the food processing field.

And through most of these years, he brought many trained men into these fields, as chemical engineers from the Illinois Institute of Technology's Department which he headed.

This March, the American Chemical Society recognizes his outstanding service with a 50-year certificate —at Los Angeles—for his 50 years of membership and service in that organization.

Today—he is still a "busy man, doing things." His is the final word on technical matters in the pages of CHEMICAL PROCESSING and FOOD PROCESSING. His travels take him from coast to coast. His enthusiasm is greater than ever. As he sees it, the chemical processing and food processing industries are only in their adolescence—it's his business to help them "grow up" for the betterment of all mankind.

We of Putman Publishing Company pay tribute to Harry McCormack for the great services he has rendered these industries through our publications.

Harry McCormack's more than fifty years of service extend from the time when chemical industry meant potstills and beehive ovens . . . he has been a part of the tide that changed petroleum products from kerosene and lube oil to "100 octane," petrochemicals, synthetic rubber . . . he, and men like him, have brought us the myriad fruits of a real chemical technology.

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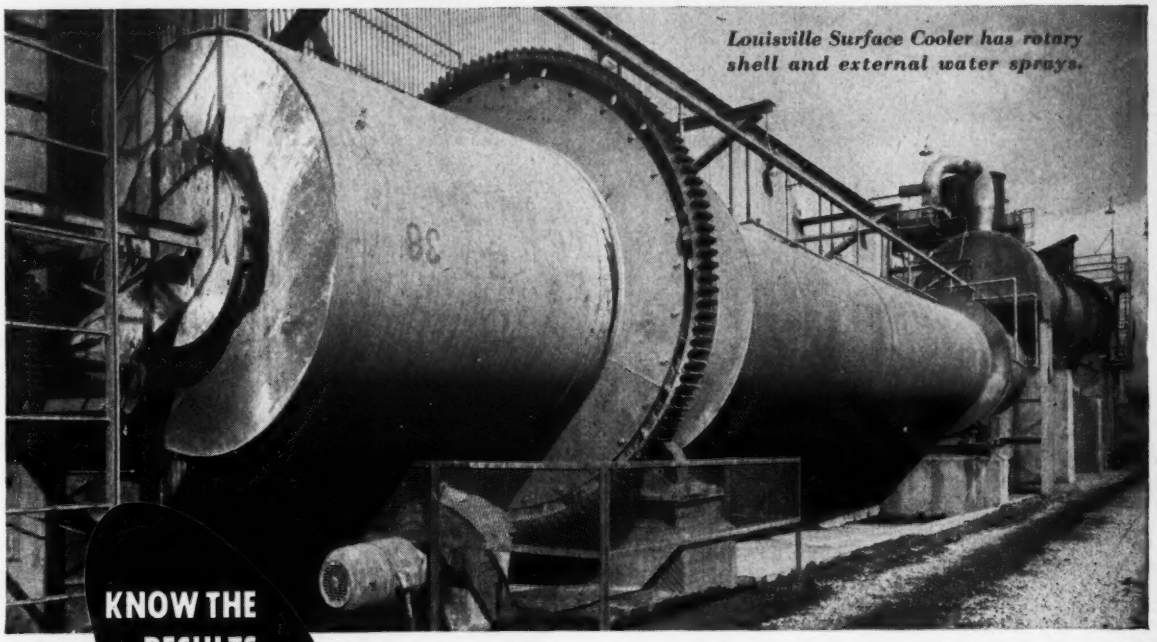
See Louisville for CREATIVE COOLING ENGINEERING

Louisville Cooler does satisfactory job at low cost for nationally known chemical manufacturer . . .



Louisville Surface Cooler has rotary shell and external water sprays.

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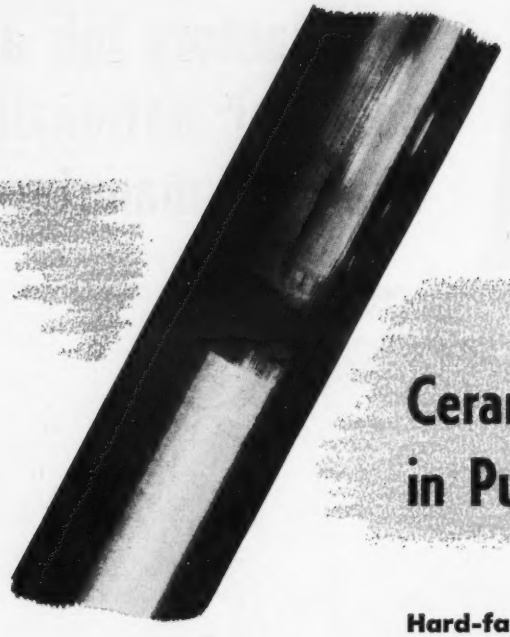


CLOSEUP OF WORN STAINLESS STEEL PLUNGER shows clearly how grooves developed and how shaft wore unevenly. Dark ring is probably a stain from lubricant and packing

Ceramic Plungers Show No Wear After Year in Pump Charging Hot Fat to Splitter

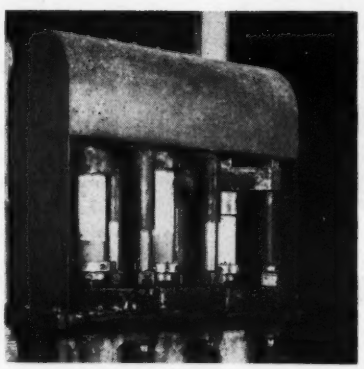
Hard-faced stainless types developed serious grooves in four or five months, bringing about excessive packing wear and leakage

PROBLEM: The stainless steel plungers in the Worthington VTE, triplex, 2 x 4" pumps charging fat to the continuous, high-pressure splitter in Armour and Company's McCook, Illinois, plant showed serious wear, due to corrosion, after relatively short service. It was not uncommon to have to replace the plungers every four or five months because of excessive leakage around the packing. As the plunger became rough, the chevron packing, an asbestos cloth and Neoprene type (Garlock 531), naturally was subjected to more and more tearing so that it failed.

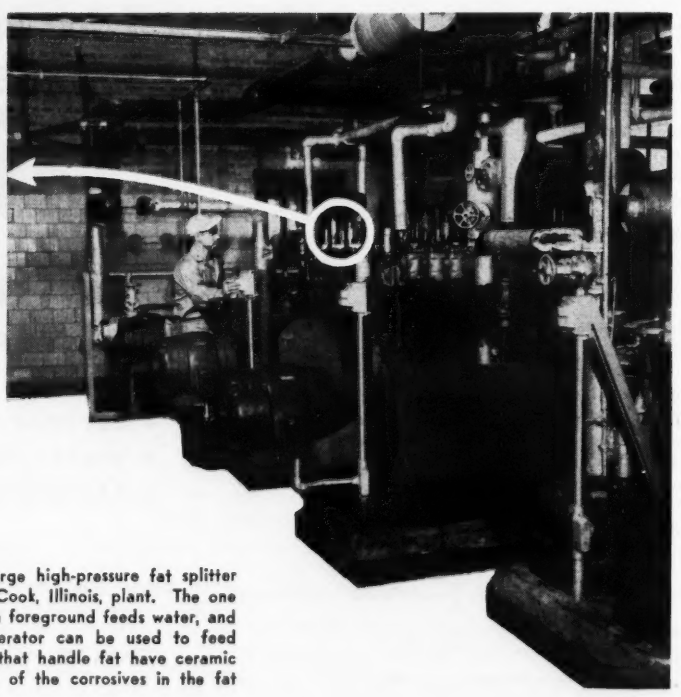
Armour uses three pumps at this plant: one charges fat, one charges water, and the other charges either fat or water. There was no trouble with wear of the stainless steel plungers in the water pump, but the problem was acute in the other two pumps. The pumps have a capacity of 7500 to 8000 lb/hr, handle fat at approximately 165°F, and pump it against a pressure of 700 psi or above in the splitter.

Up to the spring of 1951, no solution seemed satisfactory. Even hard-facing with Stellite and other alloys did not conquer the problem of excessive plunger and packing wear.

Solution: Just about that time, Worthington Corp. started to handle a ceramic type plunger for its units. The ceramic is a sintered product con-



Closeup of head with ceramic plungers in operation. Steel guides can be seen in front of and behind the three moving plungers



Three plunger pumps that charge high-pressure fat splitter at Armour and Company's McCook, Illinois, plant. The one in background feeds fat, one in foreground feeds water, and the one being started by operator can be used to feed either water or fat. The two that handle fat have ceramic plungers that resist the action of the corrosives in the fat

sisting of 85% aluminum oxide and 15% binder. It is highly resistant to abrasion and scoring, and to the corrosive effects of all liquids except strong alkalis and hydrofluoric acid. The material has a ground and polished surface which is finished to the same high precision as metallic parts. The surface is comparable to porous chrome, and has a tendency to hold lubricant, thus bringing about a very low coefficient of friction. Some physical properties of the ceramic are shown in the following table.

Tensile strength, psi	18-20,000
Compressive strength, psi	200-225,000
Flexural strength, psi	45-46,000
Specific gravity	3.4
Hardness (Moh's scale)	9

Armour conducted a short experimental program of actually trying the plungers in service, starting out with one, and adding more when the results looked promising. Finally, by the middle of 1951, the pump used for fat and the pump used interchangeably for water or fat were completely equipped with ceramic plungers.

Ceramic pump plunger with integral, metal adapter is used at Armour

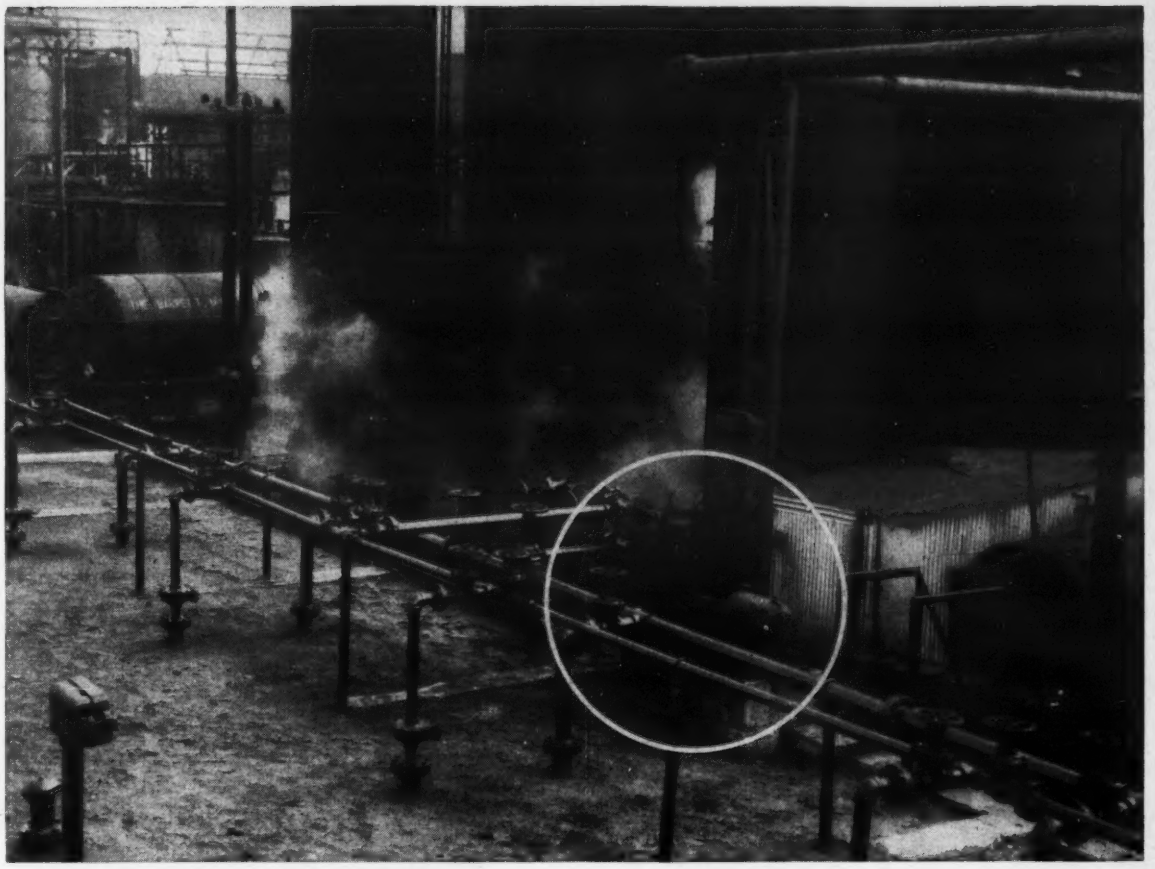
Results: Only one ceramic plunger has had to be replaced since this type of plunger was put into use; but not because it suffered chemical corrosion. It cracked because of another cause that has since been corrected. The packing now lasts four or five times as long as before, too. This is considered excellent service in face of 24-hr-per-day, seven-day-per-week splitter operation.

Bears out Theory of Surface Corrosion Resistance

It seems apparent from the experience at Armour that the corrosion resistance of stainless steel is a surface phenomenon, says Osgood Foster, Master Mechanic of the McCook plant. This is in agreement with a theory which states that a film on the surface of certain stainless steels provides the corrosion resistance, and this resistance does not extend throughout the sheet or other piece.

The probability is strong that combined chemical attack and wiping action by the packing started the

(*Continued on page* 12)



Air-Minded Engineering

The LaBour pump shown above is there because the engineers who planned this installation were air-minded. They had to be. The highly flexible piping plan, while it serves its purpose admirably, cannot avoid the introduction of large volumes of air into the system. The LaBour Type DPL handles the air along with the liquid without wasting any time.

The one pump moves coal tar solvents between tank car, storage tanks, and plant as required. Tanks are buried, sand insulated, so pumping is a suction-lift job, and prime is lost in valving from one tank to another.

Your pumping problem may be different. but your best answer is LaBour. It has been the best answer for thirty years.

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THE LABOUR COMPANY, INC. ★ Elkhart, Indiana, U.S.A.

When inquiring check CP 8187 on handy form, pgs. 2-3

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cut heat losses ...save power, fuel and money with

B-H BLANKETS

Here is high performance insulation, effective up to 1200° F. It allows close control of operating temperatures, insuring maximum output and efficiency of equipment. Chemically stable, black rockwool is felted in large sheets between different types of metal fabrics.

Soft edges interlock and form a continuous, tight blanket of insulation. It can be covered with B-H No. 1 or B-H Powerhouse finishing and insulating cement for a permanent job ... For help on any specific application or selection problem, you can depend on B-H Engineered Insulation Service.

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882 Breunig Ave., Trenton 2, N.J.

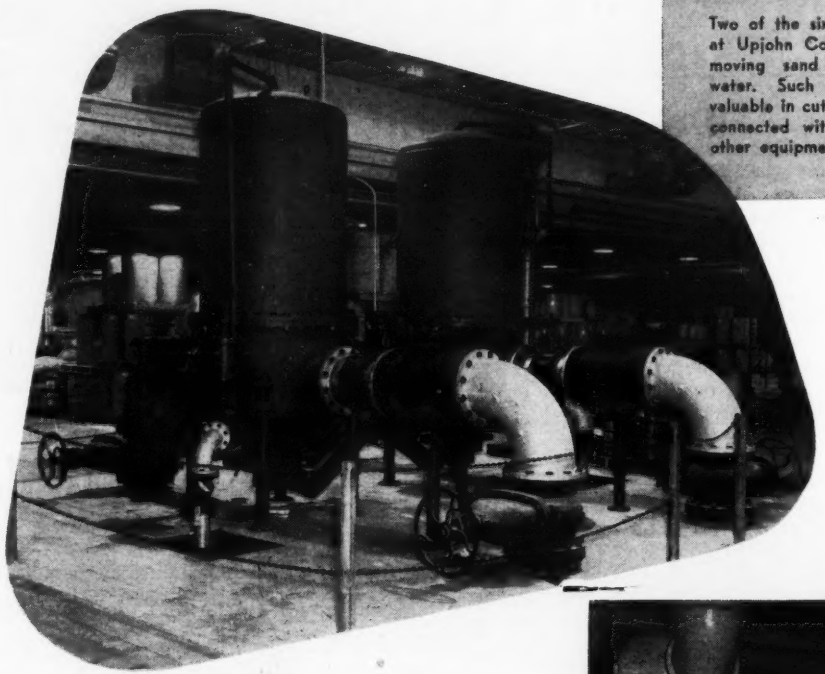
Please send complete information on

- ☐ BLANKETS ... Metal-reinforced, flexible, felted, black rockwool insulation
- ☐ NO. 1 INSULATING CEMENT ... All-purpose, rust-inhibiting, plastic cement
- ☐ MONO-BLOCK ... Rigid, felted, black rockwool block—for high and low temperature use
- ☐ POWERHOUSE CEMENT ... High adhesion, black rockwool, insulating-finishing cement

When inquiring check CP 8188 on handy form, pgs. 2-3

new solutions of processing problems

Maintenance Runs $2000-3000 Less per Month Now That Plant's Well Water Is Filtered

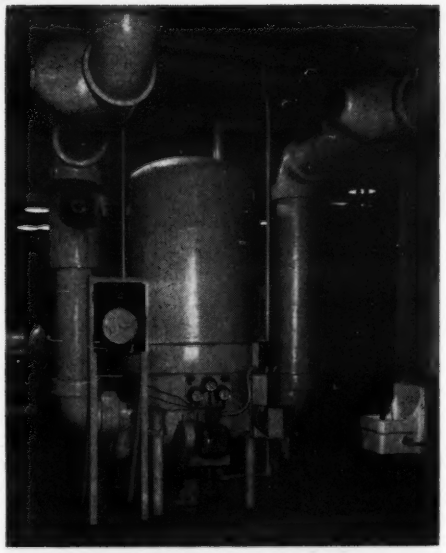


Two of the six cartridge type filters at Upjohn Company, which are removing sand from incoming well water. Such units have proved invaluable in cutting maintenance costs connected with valves, pumps, and other equipment

Sand used to settle in pipes, heat exchangers, coils and softeners; made valves stick and pumps wear out, too

PROBLEM: Even the small amount of sand in plant and process water drawn from wells at Upjohn Company in Kalamazoo (a teaspoonfull per 1000 gallons) meant trouble later on along the line. Here's what that small amount of sand did:

1) Raised pump maintenance to a high of $500 per month
2) Made valves stick
3) Made it necessary to clean sand out of the water



Filter installed in antibiotic building

softeners in the power house frequently, so that their capacity could be maintained
4) Reduced heat exchange rate in condensers and cooling coils, making frequent and expensive cleanout imperative
5) Settled in process piping
6) Settled out in distillation equipment

Besides all this there was the worry that some of the sand might reach the final product and contaminate it!

Solution: All water from the wells is now put through one of six Cuno Flo-Klean stainless-steel-cartridge filters. All are 16 x 48″ units with 0.005″ cartridge spacing. Two of them (FKR2 units) are for 14″ pipe size and handle 2500 gpm each. Two more, also FKR2 units in 14″ pipe, handle 2000 gpm each. The other two units (FKR1's) are in 8″ pipe and handle 1000 gpm each. Total flow, therefore, is 11,000 gpm. All filters are complete with automatic blowdown and controls. The deep well pumps deliver water to the filters at approximately 40 psi.

The filters operate automatically and continuously to remove the sand from the water — and eject the collected sludge to a waste line, with no loss of backwash.

Results: Upjohn estimates that the first unit installed, one of the FKR1's in the power house, is saving them between $2000 and $3000 a month in maintenance costs. The company does not expect the other five units to effect such a tremendous saving, but they should achieve excellent results.

The filters prevented what might have been serious damage at one time since they have been in. The walls of one of the wells broke down and dumped an estimated seven yards of gravel into the plant piping system. The filters caught all of this before it had a chance to ruin expensive pipe, valves, pumps, and other equipment.

(Filters are made by The Cuno Engineering Corporation, Dept. CP, Meriden, Conn. . . . or for more information check CP 8189 on handy form, pages 2 and 3.)

Converts radioactive energy into electrical energy

Radioactive sensitive element, used in line of nuclear radiation measuring instruments, converts radioactive energy directly into electrical energy without employing an external source of excitation to produce this phenomenon. When the filling gas which separates two electrochemically dissimilar electrodes is exposed to nuclear energy, it is forcibly ionized and causes a small continuous current to be produced and flow from the more noble to the more active electrode.

The mechanism of energy conversion, cell characteristics and types of cells are discussed in 4-page bulletin. Bul 101 is issued by The Ohmart Corp., Dept. CP, 2347 Ferguson Rd., Cincinnati 38, Ohio. When inquiring specify CP 8190 on handy form, pages 2 and 3.

Chase Bag makes

POLYETHYLENE BAG AND DRUM LINERS

MULTIWALL BAGS

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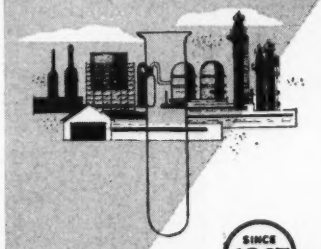
PROTEX WATERPROOF PAPER LINED BAGS

for the Chemical Industry



Complete protection of your product
plus attractive appearance
. . . the result of
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When inquiring check CP 8191 on handy form, pgs. 2-3

Ceramic Plungers

(*Continued from page 9*)

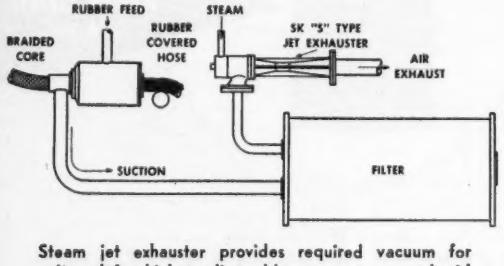
wear by taking off the protective film or skin. Then, due to the wiping action, plus more exposure to the corrosives in the hot fat, the protective film could not reform. Hence, further corrosive wear took place, particularly where the packing pressed hardest.

(Pumps and ceramic plungers are products of Worthington Corp., Dept. CP, 426 Worthington Ave., Harrison, N. J. . . . or for more information check CP 8192 on handy form, pages 2 and 3.)

Rubber hose quality better because of revised way of coating core . . .

steam jet exhauster produces dependable vacuum, cuts rejects and maintenance shut-downs

Problem: During a key phase of the production of rubber hose at Thermoid Company in Trenton, N. J., the rayon braided core is coated with rubber in the plastic state. This step is done in a machine where a strong, regular suction must be employed to draw the rubber down, around, and into the braid. In addition, the vacuum has to remove fuzz, soapstone, and other foreign material from the core, to further insure uniform adhesion of the rubber all along the core and to prevent unsightly defects.



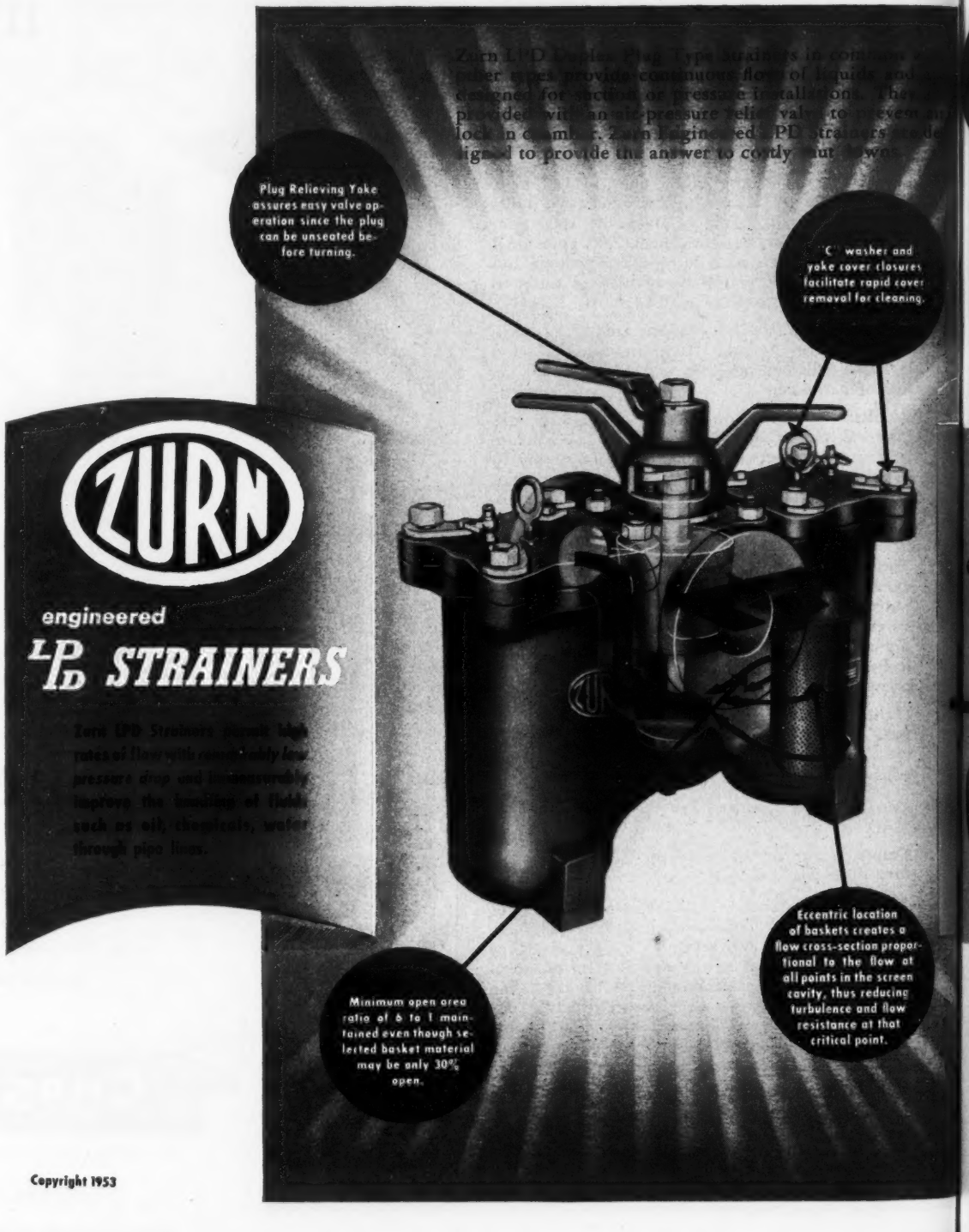
Steam jet exhauster provides required vacuum for unit at left which applies rubber cover to rayon-braid hose core

Thermoid found it difficult to maintain a uniform and high enough suction with the existing vacuum system. As a result, the uncured rubber cover did not fit closely and, when processing by the lead-press method, lapping and "push-backs" occurred. This meant costly rejects.

Not only that, but the foreign material removed from the braid plugged the mechanism of the vacuum producer, causing excessive shut-downs. At such times, the four men operating the rubber cover extrusion process were made non-productive.

Solution: The company engineers revised the system and put in a steam jet exhauster which maintains a vacuum of 24 to 26″ Hg. To the part of the unit where the rubber is drawn against the core, they attached a rubber hose. This hose was connected to two filters in parallel (the simplified drawing shows only one) and the exhauster is

You can maintain more of the


Plug Relieving Yoke assures easy valve operation since the plug can be unseated before turning.
"C" washer and yoke cover closures facilitate rapid cover removal for cleaning.
ZURN
engineered
LPD STRAINERS
Eccentric location of baskets creates a flow cross-section proportional to the flow at all points in the screen cavity, thus reducing turbulence and flow resistance at that critical point.
Minimum open area ratio of 6 to 1 maintained even though selected basket material may be only 30% open.

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Full-Rated Pressure with . . .

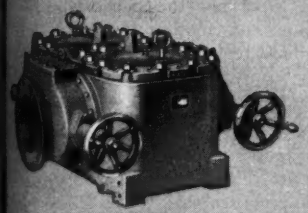
ZURN Engineered

LOW PRESSURE DROP STRAINERS

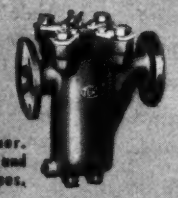
Zurn Low Pressure Drop (LPD) Strainers are design improved for correct circularity. They have ample waterways; smooth inner walls; correctly sized and perforated baskets, eccentrically positioned, all of which combine to reduce pressure loss and afford maximum protection for all types of mechanical units connected with pipe lines. Zurn LPD Strainers are held to close tolerances for materials, shapes, and dimensions, assuring the utmost in strength and safety and continuous operation.

Zurn LPD Strainers are widely used to protect close-tolerance control devices and delicate mechanisms, also to protect product purity. They make continuous production processes possible. Zurn Fluid Handling Engineers are available for consultation on your particular problem.

There is a ZURN LPD Strainer for every fluid handling purpose

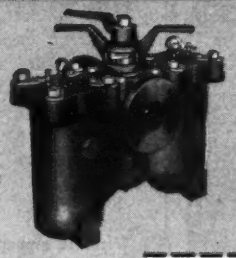


Zurn Duplex Gate Type Multi-Basket Strainer.



Zurn Simplex Strainer. Available in offset and straight-through types.

Zurn "Y" Type Strainers available in any cast material and for high pressures.



Zurn Duplex Plug Type Strainer.

Zurn LPD Strainer applications include fluid handling lines for lubricating and fuel oil, and oil during the refining process; a wide range of chemicals produced and used by the various process industries; public utility power plants; power stations; industrial plants; ships and high temperature installations. Zurn Fluid Handling Engineers are available for consultation.

Pat. & Pat. Pending

J. A. ZURN MFG. CO.

INDUSTRIAL DIVISION • ERIE PA., U. S. A.

In Canada: Canadian Zurn Engineering Ltd., Montreal, 25, P. Q. Canada

Write for LPD Strainer Manual Data No. 952.

This manual includes previously unpublished pressure drop data and gives useful, factual information on fluid handling.

J. A. ZURN MFG. CO.

Industrial Division, Erie, Pa., U. S. A.

Please send me Zurn LPD Strainer Manual Data No. 952.

Name_____

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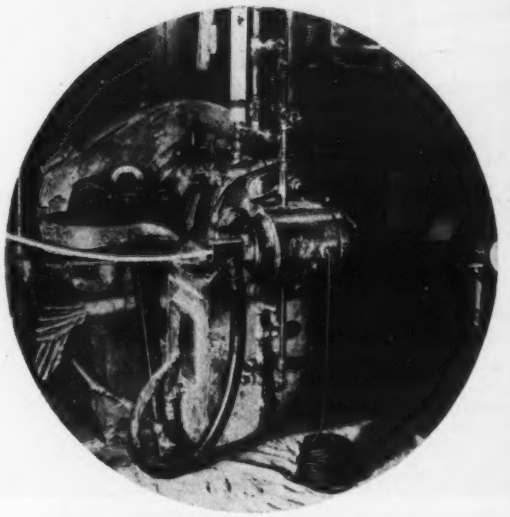
Please attach coupon to your business letterhead—Dept. CH.P.

When inquiring check CP 8193 on handy form, pgs. 2-3



Closeup of rubber-covering unit shows braided core (white) entering at left, and rubber-covered hose leaving at right (horizontal blank line). Thin stream of rubber forming coil is excess, and is periodically returned to the rubber processing machinery. Heavy hose leads to filters and jet exhauster

connected into them. A glass fiber packing inside each filter strains out the particles drawn over from the braid. One filter operates while the other is cleaned.

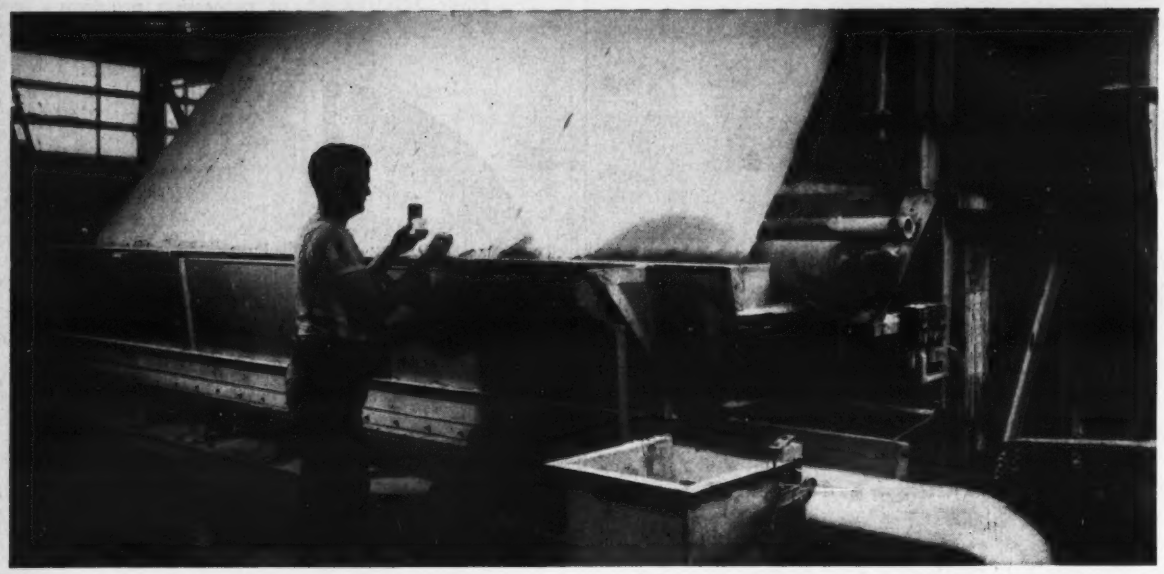
Results: Rejects of finished hose have been practically eliminated. Shut-downs for unplugging have been completely eliminated, and production through the cover extruder is now steady at all times. Quality of the hose is much improved.

(The "S" Type jet exhauster used here was made by Schutte and Koerting Company, Dept. CP, Cornwells Heights, Bucks County, Pa. . . . or for more information check CP 8194 on handy form, pages 2 and 3.)

Colloidal graphite lubricates where other materials fail

On oven equipment for baking and enameling, in bearings of kiln cars and furnace cars, on glass-making machinery, and in other similar applications, colloidal graphite produces a tenaciously adsorbed graphoid film which resists oxidation, discourages corrosion, eliminates sticking, and reduces friction. Material is heat-resistant and odorless, and is effective as a high-temperature lubricant because it is inert and clings stubbornly to sliding or rubbing friction surfaces, retaining its lubricating properties even when subjected to high pressures.

Features and applications of colloidal graphite in various carriers are given in 4-page bulletin. Bul 423 is issued by Acheson Colloids Co., Div. of Acheson Industries, Dept. CP, Port Huron, Mich. When inquiring specify CP 8195 on handy form, pages 2 and 3.



FEinc Rotary Vacuum Filter used by Davison Chemical Corporation in production of micro-spheroidal silica-alumina cracking catalysts.

SILICA GEL ...HANDLED BETTER FASTER, WITH FEinc's STRING DISCHARGE

The same type of String Discharge that handles cakes ranging from thin slimes to thick, heavy sludges . . . lifts this viscous hydro-gel cleanly from the filter cloth. There's no smearing, blinding, or plugging of the fabric. At the same time, the FEinc Compression Mechanism gives a drier, easier-to-handle cake.

The superior features of the String Discharge make rotary vacuum filtration possible on many processes that were formerly handled by costly "stop-and-go" methods. FEinc filters handle a wide variety of processes and products . . . are easily adapted to almost any type of work.

Find out more about what these versatile, efficient filters can do for *your* process . . . write us today.

HOW TO LEARN MORE ABOUT FEinc FOR YOUR PROCESS...

1 FREE TESTING SERVICE

At no expense to you, we'll test your slurry and send you a complete report on what FEinc filters can do for you. In your plant, without interrupting your process, or in our laboratory, with a 5-gallon sample of your slurry. Send it today!

2 PILOT PLANT FILTER

RENT this small but complete rotary filter. Has all FEinc features, plus interchangeable scraper discharge. No capital investment is required, and a generous part of the low monthly rental can be credited against the future purchase of any FEinc filter. Write today for details.

FILTRATION ENGINEERS INC.

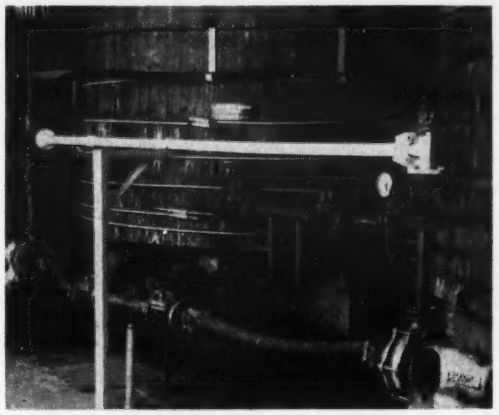
155 ORATON STREET • NEWARK 4, NEW JERSEY

When inquiring check CP 8196 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

Acidified brine solution corrodes rubber and metal piping — not polyvinyl plastic

Use of rubber hose to carry a large chemical company's highly corrosive, acidified dilute brine resulted in plugging when particles in the solution would stick to the inside of the hose. This involved dismantling and unplugging the hose about every three



Rubber and metal pipe caused trouble, until this polyvinyl chloride pipe (white) was installed

months. They tried metal pipe, but the particles would adhere to the welding; and another type of corrosion-resistant pipe was hard to install and broke easily.

Solution to the problem was installation of a rigid plastic pipe, which had the corrosion-resistant, strength, and lightweight properties imparted by Geon polyvinyl chloride resin. Additional benefits derived from this polyvinyl pipe are that it can be used to convey liquids or gases underground or overhead, since it resists soil acids, alkalis, and electrolysis, and does not require a protective coating or wrapping.

(Formulator of Geon resin used in plastic pipe is B. F. Goodrich Chemical Co., Dept. CP, Rose Bldg., Cleveland 15, Ohio . . . or for more information about this product simply check CP 8197 on handy form, pages 2 and 3.)

Plastic sheet preheating time cut 55% by switch to infrared oven . . .

transparent Plexiglas absorbs radiation provided by electric panels in "homemade" unit

Time required to preheat 5 by 8′, 1/16 to ¼" thick Plexiglas sheets for forming and vacuum molding has been reduced 55% by an eastern fabricator. The former method of heating by convection required an average of 18 minutes,

For more information on product advertised at right, specify CP 8198 . . . see information request blank between pages 2 and 3.

LADISH

Controlled Quality

PIPE FITTINGS

offer dependability safeguarded by advanced metallurgy

Year after year... in all kinds of service... Ladish Controlled Quality Fittings set new standards of reliability. One reason is the strong reliance on technical progress. Every new facility and advanced technique of modern metallurgy is fully utilized to develop desirable physical properties to maximum limits... while unrelenting test procedures continuously safeguard metallurgical soundness and provide users with authentic data proving the complete dependability of every Ladish Fitting.

TO MARK PROGRESS

THE COMPLETE *Controlled Quality* FITTINGS LINE
PRODUCED UNDER ONE ROOF... ONE RESPONSIBILITY

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"...On the feet of Individuals."

Society advances on the feet of individuals. We Americans live under the highest standard ever achieved because we believe in and are permitted currently to practice three of the cardinal principles of progress—Invention, Research and COMPETITION.

Nineteen basic inventions influence our pattern of life today. Each one was created to satisfy a fundamental need for improvement—a modern means of competing as against outmoded procedure. Each one, such as the electric light, the telegraph, the amplifying tube, the induction motor, created a new industry in which numerous companies strove in free competition for the maximum share of business.

For example, since Thomas Edison invented the incandescent filament lamp in 1880, the electric light industry has grown to an annual volume of $501,500,000 in light bulbs alone; in May, 1906 the Wright Brothers received the patent for their flying machine; the value of aviation manufactures in 1951 in the United States alone was estimated at $3,350,000,000 and in February, 1952, records show a $10½ billion backlog of orders.

More rapid still is the growth of the radio-television industry which today produces some $230 million worth of home radio sets and $1,570,800,000 in television sets. In every case, employment and sales volume grew enormously and the public enjoyed huge personal benefits.

Side by side with Invention came Research, exemplified by the competition of intelligent men questing for new materials, new methods, new processes, new scientific truths. Current advertisements tell of hundred-year tests to assure better materials for the future, technology that produces metals to withstand almost inconceivable heat, machines calculating 20,000 times faster than the mind of man, medicines that cure "incurable" diseases, food processes that cook, sterilize and pack hundreds of cans a minute. And in every case, the public enjoys huge personal benefits.

This is what James A. Decker undoubtedly had in mind when he wrote the line,"Society advances on the feet of individuals." These "individuals" are you and I, all our countrymen, benefiting every day from Invention, Research—and from COMPETITION.

Developing inventions, marketing products, and pursuing scientific research require substantial investments. A grave danger to their future now looms. In 1951, corporation net profits suffered a loss of 21% over the previous year. The reason—taxes too high, government controls and policies that interfere too greatly with private industry. If this continues, financial resources will dwindle, competition will be stifled.

Without free competition, American progress stops. No country can long exist when its government calls all the shots. We need competition to assure progress for people.

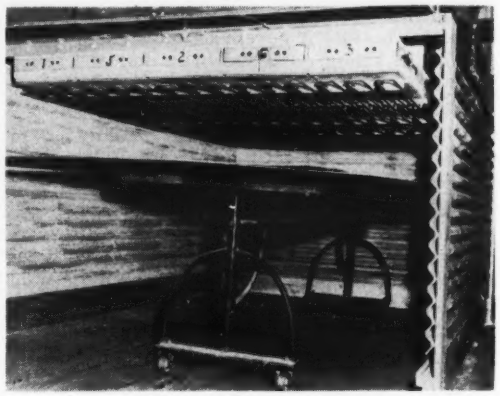
★ ★ ★

This report on PROGRESS-FOR-PEOPLE is published by this magazine in cooperation with National Business Publications, Inc., as a public service. This material, including illustrations, may be used, with or without credit, in plant city advertisements, employee publications, house organs, speeches, or in any other manner.

THE COMPETITIVE SYSTEM DELIVERS THE MOST TO THE GREATEST NUMBER OF PEOPLE

while the new method — heating by far-infrared radiation — takes only 8 minutes.

The simple oven was quickly and easily constructed on location at a fraction of the cost of a fuel-fired oven. Ten standard electric radiant panels were bolted to a simple framework and closed on three sides with corrugated asbestos



Plexiglas sheet being preheated in infrared oven

shields to restrict heat loss. Panels have integral insulation, and interconnecting 100-amp bus is built-in to simplify wiring. With a capacity of 108 kw, two input controllers vary the radiant output to suit the sheet thickness.

Sheet is moved into the oven on an adjustable-height table. The radiation is absorbed by the transparent plastic and is not transmitted. Design produces a uniform heating pattern over all.

Power demand is as little as 36 kw, amounting to a power cost of only a few cents per 40 sq ft section of the lighter grades of sheet.

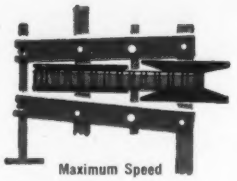
(Chromalox far-infrared electric panels are made by Edwin L. Wiegand Company, Dept. CP, 7517 Thomas Boulevard, Pittsburgh 8, Pennsylvania . . . or reader may secure more information by simply checking CP 8199 on handy information request slip between pages two and three.)

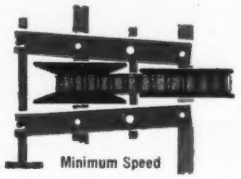
How to desulfurize molten iron with dense soda ash

Slanted toward the foundryman, 12-page booklet explains, in non-technical language, the advantages of desulfurizing molten iron with dense soda ash. This material is 100% active, granular, free-flowing, clean, and easy-to-use. Seven pages are concerned with how to apply the soda ash treatment. Five pertinent photographs are included in this section.

"The Advantages of Desulphurizing Molten Metal with Solvay Dense Soda Ash" is issued by Solvay Process Division, Allied Chemical & Dye Corporation, Dept. CP, 61 Broadway, New York 6, New York. When inquiring about this product simply specify CP 8200 on handy Reader Service slip, pages 2 and 3.

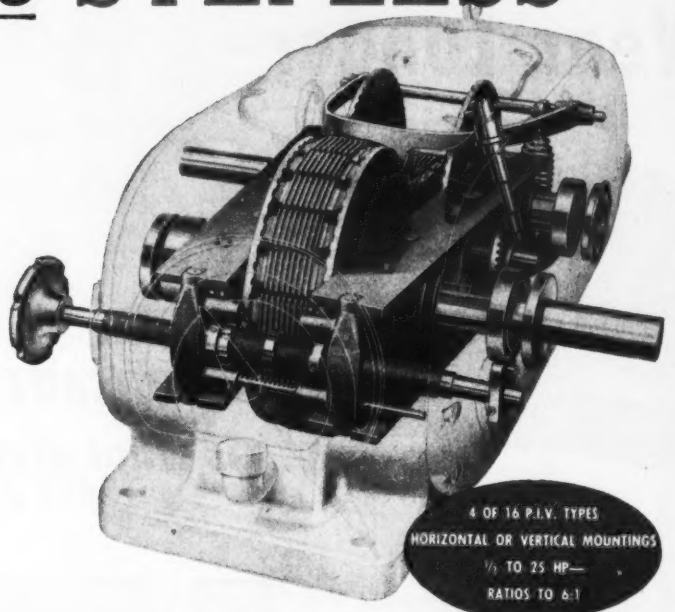
Always POSITIVE... *Always* STEPLESS





Note how the effective diameter of P.I.V.'s wheels can be altered to change their ratio. You can select any point—from maximum to minimum setting—and get positive, accurately maintained speed.

ALL INDUSTRY USES P.I.V.*
*Positive, Infinitely Variable



4 OF 16 P.I.V. TYPES
HORIZONTAL OR VERTICAL MOUNTINGS
⅓ TO 25 HP—
RATIOS TO 6:1

P.I.V. Variable Speed Drive gives you infinite speed choices

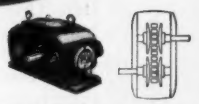
SELECT ANY SPEED within normal operating range, and you can always be sure Link-Belt's P.I.V. Variable Speed Drive will maintain it accurately under full load conditions.

P.I.V. is not dependent on friction for power transmission. Self-tooth-forming chain meshes with grooved wheels to provide positive, infinitely variable speed selection. Using P.I.V., your machines are capable of working to maximum capacity according to the job. Control can be manual or automatic while running under full load.

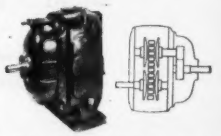
Link-Belt's P.I.V. Variable Speed Drive is compact. It is particularly adapted to delicate or sensitive manufacturing processes that require exacting variable speed transmission. Find out how you can increase the flexibility and efficiency of your machines. Call your nearest Link-Belt office today for complete, detailed information. Send for Catalog No. 2274.

P.I.V. LINK-BELT
VARIABLE SPEED DRIVE

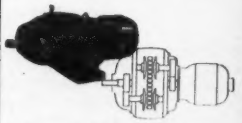
LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities. 13,115



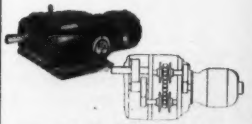
Basic, Positive, Infinitely Variable (P.I.V.) Speed Drive.



P.I.V. with single reduction input or output helical gears.



Motorized P.I.V. with single reduction input and output helical gears.



Motorized P.I.V. with single reduction input and double reduction output helical gears.

When inquiring check CP 8201 on handy form, pgs. 2-3

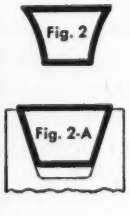
WHY
Gates V-Belts Wear Longer-

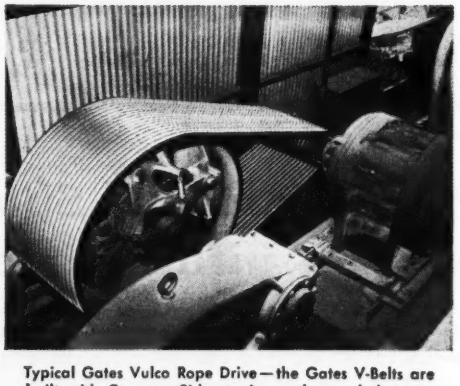
The CONCAVE SIDE (U.S. Patent No. 1813698) is what gives the Extra Wear!

Take any *straight-sided* V-Belt (Fig. 1) and bend it as it bends in going around its pulley. You will clearly see its sides *bulge out* (Fig. 1-A). These sides therefore press *unevenly* against the V-pulley and this causes extra wear at the point shown by arrows (Fig. 1-A).

Now bend a Gates Vulco Rope with CONCAVE SIDES (Fig. 2).

You will see the precisely engineered CONCAVE SIDES fill out to an exact fit in the sheave-groove (Fig. 2-A). The sides press *evenly* against the V-pulley. All wear is distributed *uniformly* across the *full width* of the Gates Vulco Rope—and this means longer belt *life* and *lower* belt *costs* for you.





Typical Gates Vulco Rope Drive—the Gates V-Belts are built with Concave Sides to insure longer belt wear.

When you buy V-Belts, be sure to get the V-Belt with the CONCAVE SIDES—the Gates Vulco Rope!

Gates Engineering Offices and Jobber Stocks are located in all industrial centers of the United States and in 71 foreign countries.

CS-533

V-Belts—Hose
Molded Rubber Goods
for Industry
World's Largest Maker
of V-Belts

Gates® VULCO ROPE DRIVES

THE GATES RUBBER COMPANY • DENVER, U.S.A.

When inquiring check CP 8202 on handy form, pgs. 2-3

Thermostats control hot goo where level controllers became fouled . . .

row of elements gives constant indication of asphalt level in tank at 420°F

Problem: Flintkote Company of East Rutherford, New Jersey used a tank 15 feet deep for saturating insulated siding with liquid asphalt at a temperature of about 420°F. Asphalt level was important because it governed amount of penetration in the siding — as shown in diagram, siding picks up asphalt by passing down one side of tank and up the other. Though a level system was needed, the high temperature and high viscosity of the asphalt indicated that conventional level controls would fail in service.

Solution: High temperature of the asphalt was put to use by mounting two vertical rows of Thermoswitch units, each containing 11 units spaced 6 inches apart. Mounted on opposite walls

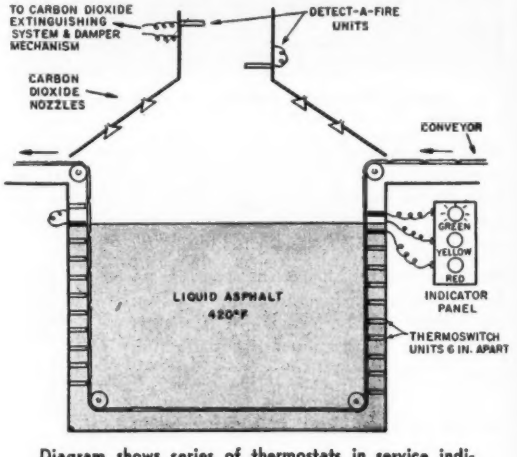


Diagram shows series of thermostats in service indicating liquid level of asphalt at 420°F. Similar units in fume exhaust hood are set to operate at 500°F. In event of fire they blanket tank with carbon dioxide, and close damper in exhaust fume duct

of the tank, the rows were staggered vertically so that liquid level could be measured at 3-inch intervals. Plug-in connections to all the thermostats were provided so that plant men could connect any three to three pilot lights.

These thermostats follow position of liquid level by responding to temperature of asphalt. They are set to open the circuit at 375°F (approximately) to operate pilot lights.

Thus thermostats submerged in the hot asphalt have open contacts; those above liquid level have closed contacts. Set of three pilot lights is used, red light indicating lowest allowable level; yellow light indicating safe operating level; and a green light, highest allowable level. During normal operation red light is extinguished, yellow light blinks intermittently. Green light should burn steadily — if it does not, tank is flooding.

An alternate system using thermostats which close at high temperature was also a possibility. Had

it been used, a warning bell or horn could have been inserted in series with upper and lower thermostats to give additional warning when liquid level might have been above or below the safe operating limits.

Flintkote installation was designed with thermostats which open on temperature rise so that pump controls could be added to system if needed in the future. Thus, when thermostat at maximum allowable level opened, pump motor would immediately be cut off.

High temperature of viscosity of the asphalt did not impair operation of Thermoswitch units. Switch mechanism is entirely enclosed within cylindrical outer shell. And, though unit's adjustable range setting extends to only 500°F, it is constructed to withstand sizable temperature overshoots.

Results: Heat-level sensing system has been in service since June 1951 and has given no major trouble. It is still being used to "back up" level control system.

(Thermoswitches are products of Fenwal, Inc., Department CP, Ashland, Massachusetts . . . or for more information check CP 8203 on handy form, pages two and three.)

Cuts maintenance of pump charging clarification press $569 per year . . .

abrasives can't enter packing gland of pump that Calco substituted for original one

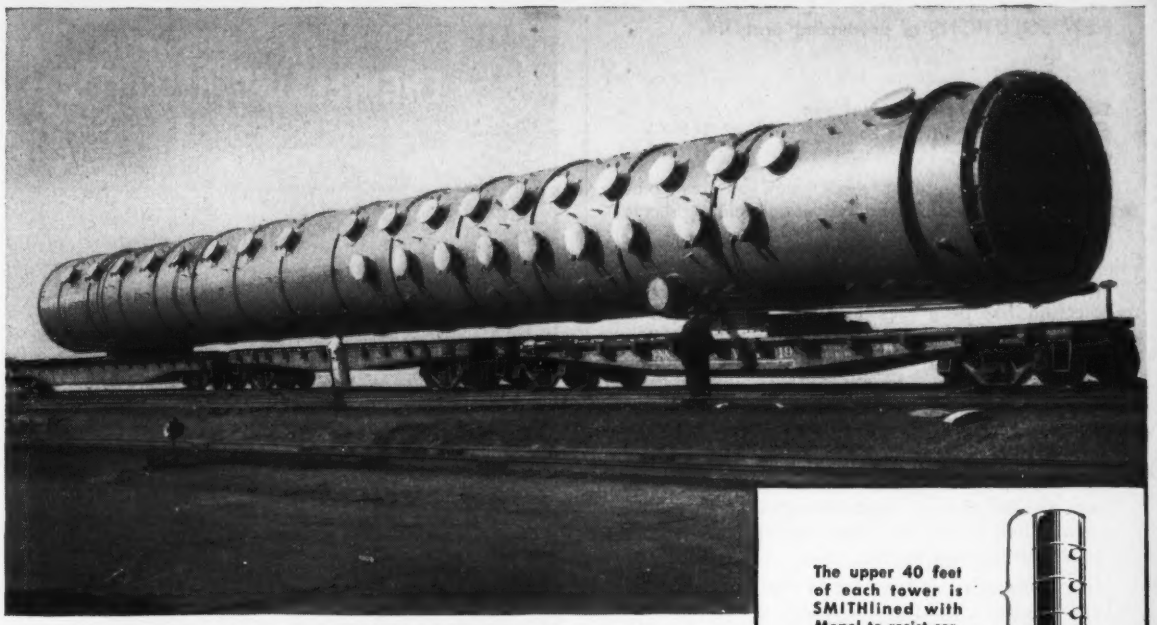
Problem: Centrifugal pump which charged a clarification press at Calco Chemical Division of American Cyanamid Company, in Bound Brook, N. J., cost $596 for maintenance per year, and had to be shut down about 84 hours for repair in that year. Main cause of the difficulty was the forcing of solid material into the packing gland, resulting in rapid wear of packing and shaft.

Pump was in nearly steady use for 24 hours per day, six days per week. The press removes sludge from a product which is in solution at the pumping temperature of 200°F, but which tends to crystallize and solidify upon cooling. Product also contains Hyflo filter aid. Pressure reached at the end of each press batch was 80 psi, and it is when the pressure reached this range that the solids were forced into the packing.

Solution: A Goulds Fig. 3705 stainless steel pump of hydraulic design similar to the old pump was substituted. The stuffing box of this pump is always under the suction line's pressure.

Results: Maintenance cost for year following installation was $27, and down-time — to replace stuffing box packing — was only two hours. This is a yearly saving of $569 in maintenance and 82 hours in down-time per year.

(Pump supplied by Goulds Pumps, Inc., Dept. CP, Seneca Falls, N. Y. . . . or for more information check CP 8204 on handy form between pages two and three.)



First of two atmospheric towers erected in The Standard Oil Refinery, No. 1, Cleveland, Ohio, each 130 feet high, 13 feet O.D. including nozzles and manways, and weighing 200,000 pounds.

The upper 40 feet of each tower is SMITHlined with Monel to resist corrosive acid vapors.
The 40-foot area where "cracking" occurs is SMITHlined with Type 316-ELC Stainless.
The bottom 50 feet is SMITHlined with Type 405 (12% Cr) to resist the corrosive action of hydrogen sulphide (H_2S).

THREE-STAGE atmospheric tower FOR SOHIO

A. O. Smith Process of "Smithlining" Permits Three Selective Linings in a Single Vessel

The economical solution of varying corrosion conditions in a single vessel is exemplified in the construction of two unusual atmospheric towers for The Standard Oil Refinery No. 1, Cleveland, Ohio.

Three types of lining, each specific for the corrosion condition in each of the three stages in the tower, were selected and bonded to the carbon steel structure by the A. O. Smith process of Smithlining.

Smithlining is the closely controlled resistance welding process of inseparably bonding alloy sheets to carbon steel vessel walls. Most alloys can be applied by this process. All liner materials can be rigidly inspected as to gauge requirements, surface finish, chemical analysis, mechanical properties and corrosion requirements prior to attachment.

The two towers were ordered and erected by Arthur G. McKee & Company of Cleveland, Ohio.

For assurance of superiority in vessel design and construction and for aid in solving vessel application problems, call on A. O. Smith, where the industry's leading laboratory, design and engineering groups are at your service.

Contact the nearest office, listed below, or write to A. O. Smith Corporation, Vessel and Heat Exchanger Division, Dept. CP-353, Milwaukee 1, Wisconsin.

INDUSTRY COMES TO A. O. SMITH WITH HEAT EXCHANGER PROBLEMS

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Washington 6, D.C.
International Division: Milwaukee 1
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When inquiring check CP 8205 on handy form, pgs. 2-3

Solvent fumes prevented use of ultra-violet lamps in antibiotic step . . .

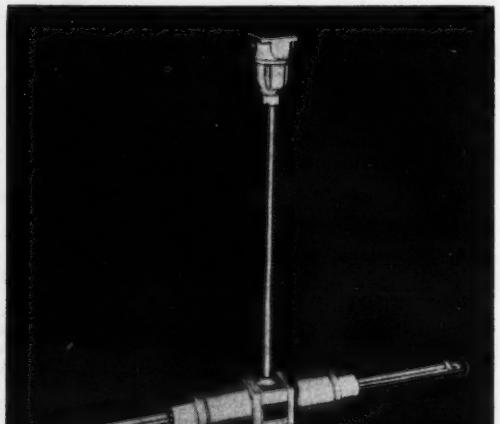
but explosion-proof model now assures complete sterilization throughout complete process

Problem: Although desirable, it has not been advisable to use ultra-violet lamps for sterilization in certain steps of antibiotic manufacture. The objection has been lack of a suitable explosion-proof lamp which could be safely used in the presence of fumes from solvents used in these steps.

Solution: Explosion-resistant ultra-violet lamps have been developed recently, and have been installed in the final processing room of the Groton, Conn., plant of Chas. Pfizer & Co. Supplementing them are batteries of high-intensity lamps, which are installed in the air ducts and special airlocks for sterilizing equipment.

Men, equipment, and air are as thoroughly "sterilized" before entering the room as is the raw antibiotic after it is piped into that sterile area for final processing.

Admittance is restricted to the chemical engineers assigned to this key operation, and they must first take showers and don special sterile clothing from head to foot. Then they enter through an airlock in which sterile air circulates. A special airlock is provided for treatment of apparatus and replacement parts; these are exposed to the direct radiation of lamp batteries so powerful that no person may remain in the airlock once the lamps are turned on.



Explosion-proof ultra-violet lamp

Air for the sterile area is washed and put through Precipitrons and filters before it enters one of four mixing chambers in which it circulates around a battery of ultra-violet lamps. Each lamp consists of a 1200-watt, quartz mercury arc, with Vycor jacket to eliminate ozone generation, and is eight times more effective than an ordinary 30"

ENGINEERING REPORTS:

POWER for Diamond Alkali's Gulf Coast chlorine plant is produced economically as a by-product of process steam by three G-E 10,000-kw turbine-generators (one shown). Long, reliable service distinguishes G-E turbines in chemical industry.

Engineered power system is key

COMPLETE RECTIFIER SYSTEM supplied and co-ordinated by General Electric includes (left to right) cathode breakers, excitation cubicles, rectifier tanks, and anode breakers. The 12 rectifiers shown each contain 12 ignitron tanks.

germicidal tube. Once in the sterile area, the air is closely controlled as to humidity and is held at 75°F.

Results: Sterilization is now complete throughout the entire antibiotic processing operation. There is much more assurance that final product will meet all specifications.

(Lamps made by Hanovia Chemical and Manufacturing Company, Department CP, 100 Chestnut Street, Newark, New Jersey . . . or for more information check CP 8207 on handy Reader Service slip between pages two and three.)

Filter cloth tests made in plant show Dynel lasts 8 times as long as cotton . . .

60-day program indicates the fiber is ¼ as expensive as cotton with corrosive slurries

In a 60-day actual-use comparison, Dynel filter cloths required about ⅛th as many replacements as comparable cotton filter cloths under similar conditions. Results indicate it cost about four times as much to furnish cotton cloths for the press as Dynel, and this does not include labor involved in cutting the cloths and redressing the press.

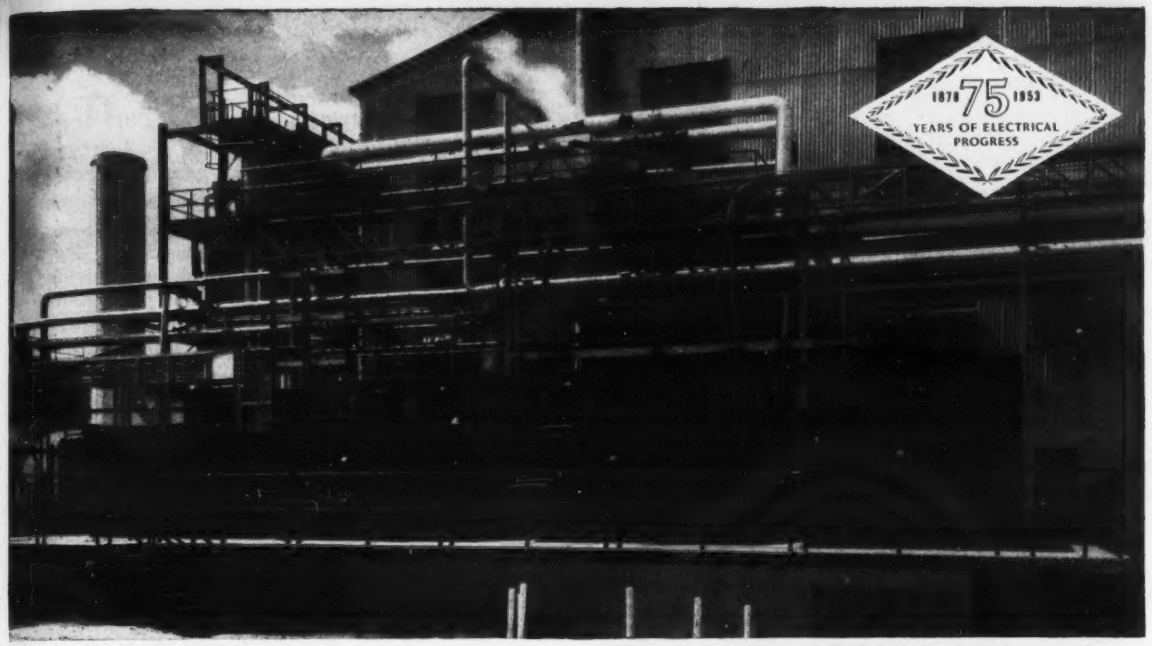
The tests were made on a 36" wood plate and frame press at Electro Metallurgical Company, Niagara Falls, N. Y., a division of Union Carbide and Carbon Corporation. Various slurries were filtered — all of which were corrosive because they contained sulfuric acid together with sulfates of iron and other metals. Temperatures averaged about 80°C, and acidities were in the range 0.5% to neutral.

Filter cloths used in the test were Wellington Sears No. 47 cotton filter twill and Wellington Sears No. SD-3 spun Dynel filter twill. Alternate plates of the press were dressed with the cotton and Dynel cloths, and the positions were reversed during the second half of the trial period. All plates were double clothed, with cotton only used for all undercloths. Cost of the underclothes consumed during the course of the test is not included in the test results.

Most of the cotton cloths which had to be changed were rotted because of acid attack. The remainder were ripped when press plates made of bad wood ruptured under pressure. In all probability, the ripped cloths had weakened fiber structure from partial acid disintegration. No Dynel cloths failed from acid attack; all of which had to be replaced were ripped by rupturing of the faulty plates.

Also noted during test: Dynel didn't get stiff, and filter cakes didn't stick as tight as on cotton as they had.

(Information courtesy of Textile Fibers Department, Carbide and Carbon Chemicals Company, a division of Union Carbide and Carbon Corporation, Department CP, 30 East Forty-Second Street, New York 17, New York . . . or for more information check CP 8208 on handy form between pages 2 and 3.)



CONTINUITY OF SERVICE is increased by a synchronizing-bus system and secondary selective arrangement to provide low-voltage power. These 4 G-E 13.8-kv switchgear units are grouped outside the turbine building to shorten cable runs.

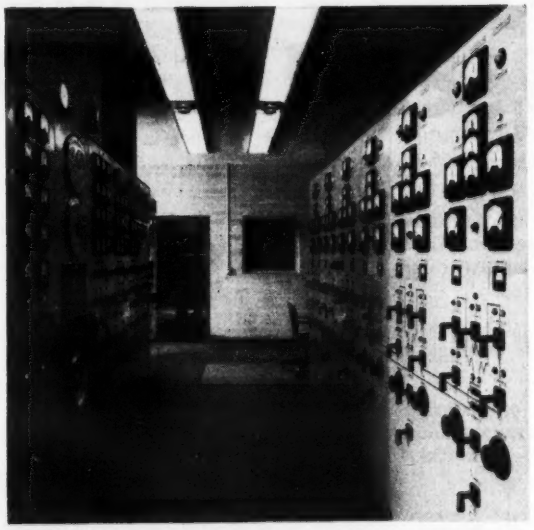
to chlorine plant's high output

Diamond Alkali installs engineered system to help maintain 920-ton daily output

In its Gulf Coast plant near Houston, Texas, Diamond Alkali produces 920 tons per day of caustic soda and liquid chlorine. Because of the large amounts of process steam required—which can also be used to generate power as a by-product—they made use of the help offered by G-E application engineers in applying the equipment needed for an addition to their power system.

Result: G-E turbine-generators develop low cost plant power as a by-product of needed process steam. Additional power is purchased from the local electric utility. G-E metal-clad switchgear units and synchronizing bus system assure power continuity for essential loads. G-E control equipment for power house and rectifier room is grouped together to save manpower and to provide centralized control. A complete G-E rectifier system provides continuous d-c power for cell lines.

Whatever your chemical plant's power-system needs, an experienced G-E application engineer can help you meet them efficiently, economically. For more information, contact your nearest G-E Apparatus Sales Office. General Electric Co., Schenectady 5, N. Y. 662-40

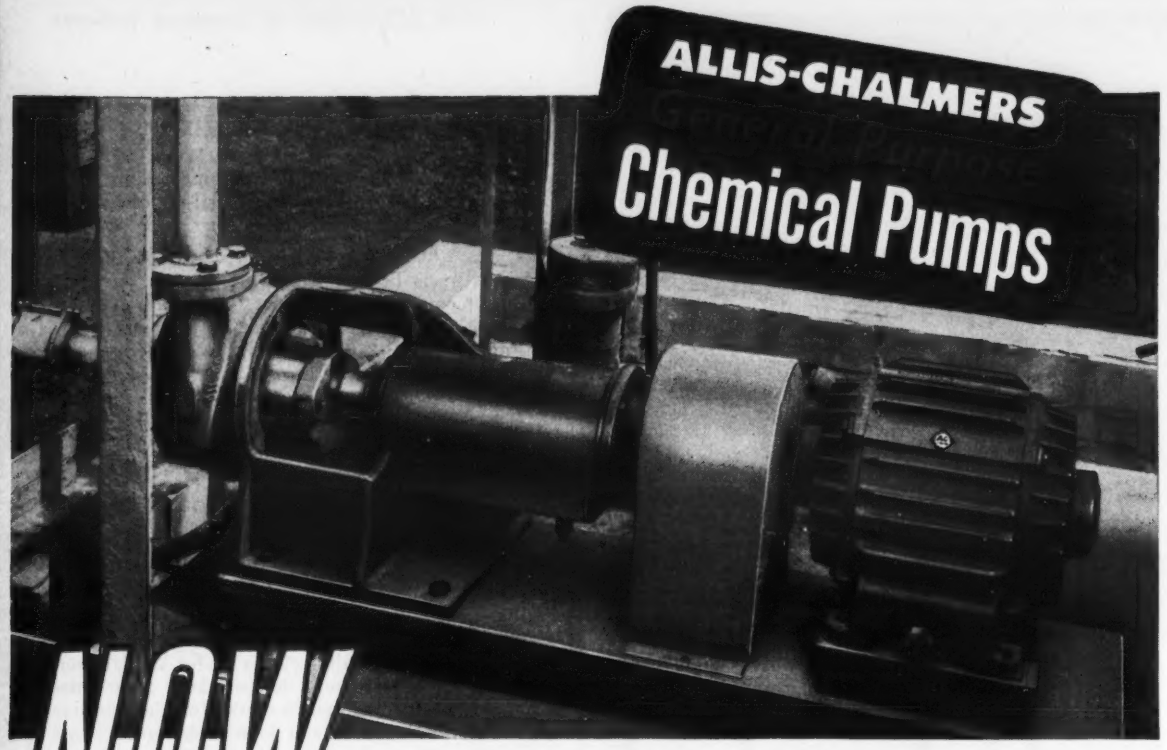


CENTRALIZED CONTROL of both the turbine-generator (left) and of the rectifiers (right) in one location enables one set of operators to supervise the plant's entire power system.

Engineered Electrical Systems for Chemical Plants

GENERAL ELECTRIC

When inquiring check CP 8206 on handy form, pgs. 2-3



NOW A Standard Pump For Many Special Jobs!

SEE WHAT THIS PUMP can do before you order a costly "special purpose" chemical pump. It will do many of the jobs of a special pump, yet it costs hundreds of dollars less to buy.

It isn't meant to do every job in the chemical industry. But it will handle a big percentage of the jobs. Check the construction and design features that make this possible:

- It's built in most used ratings . . . to 1200 gpm, heads up to 250 ft.
- Handles liquids in most common temperature range . . . up to 550 F.
- Pumps liquors, corrosive materials and solutions, and petroleum products.
- Features double-row, oil lubricated bearings. Two oil rings running in generous reservoir of oil carry oil to bearings.
- Rigid cast iron pedestal supports pump body and holds bearings in alignment.
- Built in wide choice of materials including: iron, bronze, aluminum bronze, stainless steel, high nickel alloys and others.
- Large space for packing maintenance.

Get complete information. Call your nearby Allis-Chalmers authorized distributor or district office. Or write to Allis-Chalmers, Milwaukee 1, Wis.

A-3862

NEW PUMP FILMS

See new series of 3 sound-slide films, widely praised by educational and industrial groups. Get practical, instructive information on theory, application, installation and maintenance of centrifugal pumps. Series is designed for showing to maintenance meetings, plant groups, and engineering societies. Arrange now for a showing! Call your nearby Allis-Chalmers authorized distributor or district office. Or write Allis-Chalmers, Milwaukee 1, Wis.

ALLIS-CHALMERS

When inquiring check CP 8209 on handy form, pgs. 2-3

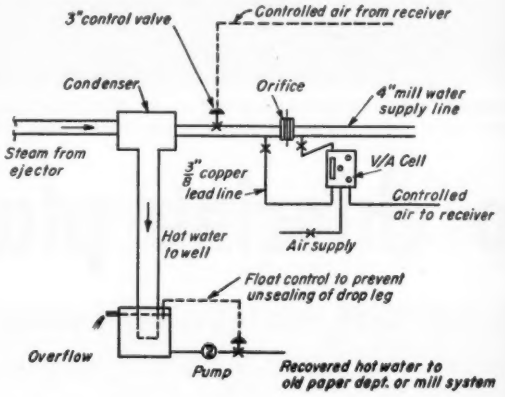
Savings on heating water are important savings at paper mill . . .

by operating condensers with just enough cooling water, plant dodges 75°F reheating job

New York & Pennsylvania Company makes sulphite pulp and book paper at their Johnsonburg, Pa., plant. Steam ejectors and a condenser provide vacuum for couch rolls and flat boxes of a Fourdrinier machine. Combined rate of cooling water and condensed steam is just over 300 gallons per minute.

At the same time, a feed of about 300 gpm is needed for feed to boilers of a hydrapulper.

A schematic of the system that has been installed at the plant is shown. Ejectors force steam into condenser and a four-inch line provides cooling water.



A V/A cell is installed around an orifice in the four-inch mill supply line and measures cold water flow to condenser. Pneumatic signal is transmitted 80 feet to an automatic controller that keeps flow constant with a control valve.

From the well which receives condensate and cooling water, the supply is drawn off to hydrapulper boiler.

Maximum hot-well temperature is attained when no more than minimum cooling water is used. This means that hot-well overflow should be held to a minimum. In operation, overflow is checked several times a day and an adjustment is made in setting on flow control for cooling water to hold flow to minimum. A further precaution is taken in a float control in the hot-well — should level drop below that needed to seal condenser leg, pump to hydrapulper boiler is stopped.

Actually, V/A cell is mounted six inches from the floor behind a paper machine. It is constantly being sprayed with water and steam. Moisture-proof housing holds maintenance to a minimum. Once a year, float is removed to clean off a deposit of fine particles from the mill water.

On the average, hot-well is held at about 110°F. There is still a job of heating water to 185°F for use in hydrapulper. But, system produces a considerable saving in heating since, in winter, mill

supply water would have to be heated 75°F to get it to 110°F.

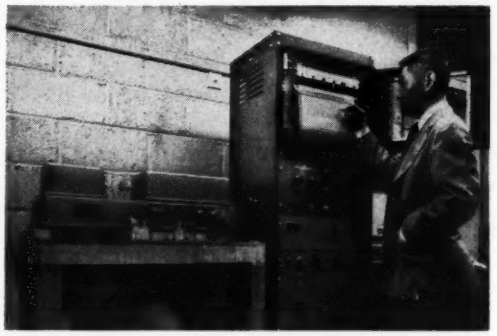
(V/A cell and other instrumentation was supplied by Fischer & Porter Co., Dept. CP, Hatboro, Pa. . . . or for more information check CP 8210 on handy form, pages 2 and 3.)

Oils and phenols in waste succumb to infrared analysis . . .

new method is sensitive to 0.1 parts per million of oil, 0.01 ppm of phenol

In line with growing concern over stream pollution abatement, Atlantic Refinery Company of Philadelphia has been working for some time on improved analysis methods for hydrocarbon oils and phenols in waste waters. Accepted methods for determination of oil in water are limited to concentrations above 1 part per million. And, analysis for oil or phenol by standard chemical methods was time consuming.

Chemists at Atlantic Refining have developed a two-purpose method which is faster, and more sensitive than conventional methods. Sample is first brominated. This makes phenols in the effluent waste soluble in carbon tetrachloride. It



Infrared spectrometer in use checking oil and phenol content of waste

does not affect the oil. Brominated sample is extracted with carbon tetrachloride, phenols are found by measuring optical density at 2.84 microns, oil by measuring in the 3.4 micron region.

Infrared spectrometer for this job is fitted with a lithium fluoride prism and 50 millimeter glass cell with quartz windows.

In order to check method a synthetic waste was prepared. Tests with this material containing both oil and phenol showed reasonably good accuracy with quantities as small as 1/10 of a part per million of oil and 10 parts, or less, per billion for phenol.

(Instrument used for this work is Model 12-A Infrared Spectrometer, product of The Perkin-Elmer Corporation, Dept. CP, Norwalk, Conn. . . or for more information check CP 8211 on handy form, pages 2 and 3.)

Ace Tempron . . . a new synthetic hard rubber for chemical equipment—now offers unexcelled chemical resistance *plus* economy for high temperature applications. In your plant, Tempron can handle many corrosive liquids—*hot*—at costs below other materials you've had to use up to now.

Based on nitrile synthetic rubber (Buna-N), Tempron is *hard* rubber—with better temperature and chemical resistance than hard or soft nitrile rubber compounds hitherto available. Mechanically it withstands temperatures up to 225 deg. F. and higher. Chemically it resists most inorganic chemicals and many organic chemicals and oils at temperatures to 200 deg. F.—and far higher in specific instances. At room temperature it has better resistance to some of the organic chemicals than other rubber and plastic materials.

In one case, Tempron pipe is still in excellent condition after 2 years on hot brine, far exceeding the life of the steel pipe it replaced.

We're now ready with Tempron pipe in 1", 1½", 2", 3" and 4" sizes and fittings in 2", 3" and 4" sizes. Additional smaller sizes of pipe and fittings are under development. We can also—now—produce molded parts, and sheets, rods and tubes from which we (or you) can fabricate a wide variety of parts.

Write today for new bulletin No. 96-A giving full details of Tempron. Or ask for samples and recommendations for your specific applications.

ACE TEMPRON resists:

TESTED AT 200 deg. F.	Hydrochloric Acid, 38%	Sodium Hydroxide, 20%	Formaldehyde
	Sulphuric Acid, 50%	Sodium Chloride	Kerosene
	Phosphoric Acid, 85%	Ethylene Glycol	Ferric Chloride
			Stannous Chloride
TESTED AT 78 deg. F.	Benzaldehyde	Ethyl Acetate	Ethylene Dichloride
	Aniline	Benzene	Chlorobenzene
	Pyridine	Toluene	Carbon Disulfide
	Gasoline	Carbon Tetrachloride	Nitrobenzene

ACE rubber and plastic products

AMERICAN HARD RUBBER COMPANY
93 WORTH STREET · NEW YORK 13, N. Y.

When inquiring check CP 8212 on handy form, pgs. 2-3

materials

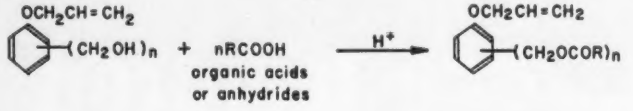
Baking-type Coating Intermediate is Also Versatile Chemical Raw Material

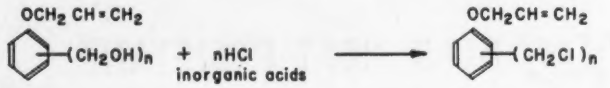
Undergoes polymerization, esterification, etherification and reactions with epoxides to yield useful derivatives

TABLE I

TYPICAL CHEMICAL REACTIONS

ESTERIFICATION





ETHERIFICATION

REACTION WITH EPOXIDES

OTHER SUGGESTED REACTIONS

1 – Oxidation ⟶ Polybasic Acids
2 – Reduction ⟶ Modified Aromatics

TABLE II

Density	1.15—1.20
Solidification point	Below -50°F
Molecular Weight	Approx 200
Refractive Index, n_D^{27}	1.567
Color	Clear Brown
Viscosity, 25°C	2000-4000 cp
Free Water Content, %	2-4
Boiling Point	Boiling range begins at approx 400°F with simultaneous polymerization
Solubility	Soluble in all polar solvents

SUGGESTED initially as a component of baking-type protective coatings, group of allylated methylol phenols, known commercially as R-108 Intermediate, undergoes several reactions which yield derivatives useful in a variety of products. Because of its chemical resistance, coupled with its compatibility with resinous materials due to its monomeric nature, R-108 found usage in protective coatings for storage tanks, tankcars, process equipment, general appliances and other metal goods as well as in container linings of various types and metal primers. These coatings are not only acid resistant, but they also show unusual resistance to alkalis and oxidizing materials, properties generally lacking in conventional phenolic materials, according to manufacturer of the intermediate.

Description and Applications

Essentially a monomeric material, R-108 is characterized by the structure shown at the top of this page. Physical properties of the material are summarized in Table II. A comprehensive discussion of the material — its properties, applications and formulations of coatings having R-108 as a component — is given on page 18 of the February 1951 issue of CHEMICAL PROCESSING.

Material may also have applications in casting resins, molding and potting compounds. Low water absorption exhibited by compound may make it useful in glues. It has also been found to act as a mild curing agent for various synthetic rubbers and to add tack to and ease the milling of such materials.

Reactions and Derivatives

Typical reactions of the compound are given in Table I. From the inherent nature of the compound itself, it will be appreciated that reaction products involving R-108 as a starting point will in themselves consist of technical mixtures. It will be noted, however, that many of the suggested products and end-uses described normally may consist of such mixtures.

Reaction with polybasic acids: Yields alkyd-type resins. Higher degree of chemical resistance is obtainable, but resultant color is not as good as that of conventional alkyd resins because of phenolic nature of R-108.

Catalysts are usually added to accelerate polymerization of material. Acid or acid-engendering products have been found most satisfactory. Where

either group of R-108 is unsaturated, sulfur and rubber accelerators, as well as metallic driers, are effective. Ammonia or amine salts of sulfuric or sulfonic acids are also suggested.

Esterification: Organic acids or anhydrides react with methylol groups of material to yield materials with suggested usage in plasticizer, wax and lubricant fields.

Reaction with inorganic acids: Compounds with possibilities for use as intermediates for further reaction to make insecticides and fungicides result from reaction of compound with inorganic acids, such as hydrochloric. Reaction gives chloromethyl side-chains.

Etherification: Leads to products useful not only as surface active agents, but also as surface coatings and pickling agents.

Reaction with epoxides: Reaction with epoxides such as ethylene and propylene oxide, results in materials applicable in wetting agent, humectant and plasticizer fields.

Other suggested reactions: Oxidation of R-108 to give polybasic acids, and reduction of compound to yield modified aromatics.

From the above, it may be seen that the intermediate may be used as a cold-blending component or as an intermediate capable of undergoing a variety of interesting reactions.

(Intermediate is available in sample and semi-commercial quantities and is a product of Chemical Div., General Electric Co., Dept. CP, 1 Plastics Ave., Pittsfield, Mass. . . . or for more information check CP 8213 on handy form, pages 2 and 3.)

Cyclic polymer of formaldehyde available in com'l quantities . . .

trioxane offers many possibilities for preparation of organic intermediates and resins

Uses: Solvent — molten compound is solvent for phenols, naphthalene, fatty acid amides, zein, urea, polyvinyl acetate, ethyl cellulose and cellulose acetate. Its solvent powers for most of the organic materials with which it can react allow compound to form homogeneous reaction systems with these materials, thus eliminating another solvent medium.

Solid Fuel — burns with a steady non-luminous flame which gives no harmful vapors or sooty materials. It is being used as a standard field ration heating tablet.

Source of Formaldehyde — anhydrous formaldehyde is often required for the preparation of organic intermediates and can be generated readily from this compound which is its cyclic trimer.

The compound can be depolymerized under acid conditions, releasing formaldehyde directly in the reaction flask at a controlled rate. The depolymerization may be terminated at any stage of the reaction by neutralization.

Reaction with Phenols — compound is compatible

(*Continued on next page*)

Can any of these ☑

SOLVAY TECHNICAL BULLETINS

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Are you interested in the handling and storage of soda ash? Do you want technical information on caustic soda or liquid chlorine? Or perhaps you're interested in the procedure for the analysis of alkalies. This is just part of the vast store of information that is included in Solvay Technical and Engineering Service Bulletins. And all this extra technical help is yours for the asking.

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- ☐ No. 4—Calcium Chloride in Refrigeration
- ☐ No. 5—Soda Ash
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- ☐ No. 7—Liquid Chlorine
- ☐ No. 8—Alkalies and Chlorine in the Treatment of Municipal and Industrial Water
- ☐ No. 9—Analysis of Alkalies
- ☐ No. 11—Water Analysis
- ☐ No. 12—The Analysis of Liquid Chlorine and Bleach
- ☐ No. 14—Chlorine Bleach Solutions
- ☐ No. 16—Calcium Chloride

NAME_____

ORGANIZATION_____

ADDRESS_____

CITY_____ ZONE_____

STATE_____ AM-3

When inquiring check CP 8214 on handy form, pgs. 2-3

(*Continued from preceding page*)

with most phenols. With phenol itself, a solution is formed that remains liquid at room temperature and is indefinitely stable on storage, if kept neutral. It is then necessary only to add an acidic catalyst to initiate reaction.

Stabilizing Agent — has been reported to be an excellent stabilizing agent for such chlorinated solvents as trichloroethylene, perchloroethylene and carbon tetrachloride. When these chlorinated solvents are used for vapor degreasing of metal parts, the addition of the compound inhibits the etching of the metal.

Miscellaneous Applications — 1) air deodorizer component, 2) electroplating baths, 3) tanning agent raw material, 4) organic syntheses, 5) production of lube oil pour depressors, and 6) component for photographic developers.

Features: Availability in commercial quantities.

Description: Trioxane is a cyclic polymer of formaldehyde. Its physical properties follow:

Appearance	colorless crystals
Odor	ether-alcohol
Mol wt	90.08
Melting pt	62
Boiling pt	115
Vapor pressure, mm Hg, @25°C	13
Specific gr molten @ 65°C/20°C	1.17
Flash pt, Tag open cup, °F	113
Heat of combustion, Kcal/gm @ 23°C	3.96
Explosive limits, % by volume in air	3.5-28.7
Heat of sublimation, cal/gm	150
Heat of vaporization, Kcal/mol @114°C	9.8
Specific heat, gm cal/gm/°C	0.22

(Offered by Celanese Corporation of America, Dept. CP, Chemical Div., 180 Madison Ave., New York 16, N. Y. . . . or for more information check CP 8215 on handy Reader Service slip between pages 2 and 3.)

Series of hydrocolloids performs a variety of useful functions

Refined hydrocolloids, derived from sea plants, are capable of being utilized in operations requiring thickening or viscosity increase, binding, gelling, control of crystal growth, or stabilization of emulsions, suspensions and foams. Essentially mixed salts of a polysaccharide sulfate, colloids contain galactose units which account for approximately two-thirds of the total organic matter.

Information on general molecular composition and useful properties of these colloids is given in Technical Bul 1, a component of a kit containing detailed information on the compounds, their uses and properties. Technical Bul 21 provides a listing of the various types of compounds available and corresponding uses. Necessary information on handling and use of the materials is presented in Technical Bul 42.

"SeaKem Basic Information Kit", containing all of the above bulletins, is issued by Seaplant Chemical Corp., Dept. CP, 63 David St., New Bedford, Mass. When inquiring specify CP 8216 on handy form, pages 2 and 3.

Hooker Chemical Guide (ONE OF A SERIES)

USE this handy reference to save time in selecting high quality chemicals.

HOOKER Monochloroacetic Acid

Synonyms: Chloroacetic Acid, Chloroethanoic Acid

Formula: $CH_2ClCOOH$

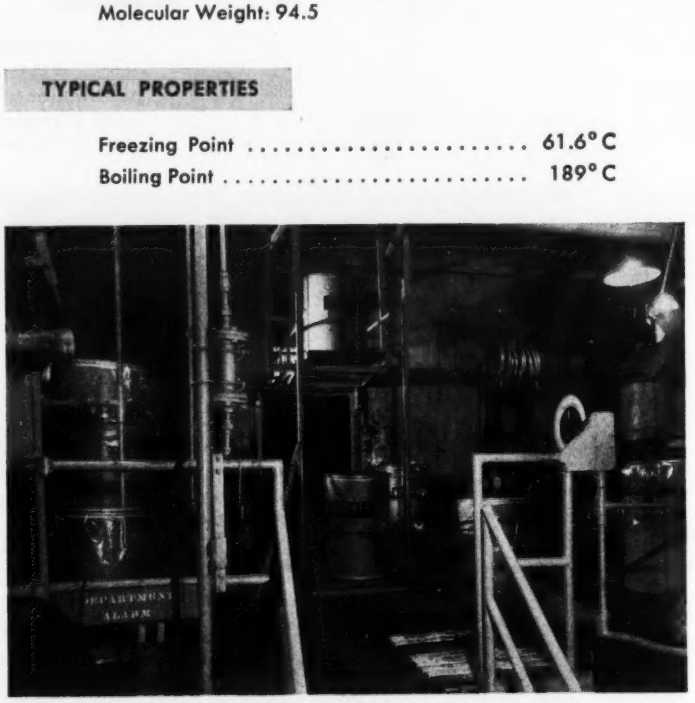
Appearance: White crystalline material

Molecular Weight: 94.5

TYPICAL PROPERTIES

Freezing Point ..... 61.6°C

Boiling Point ..... 189°C



Modern packaging facilities at Hooker help to protect the quality of monochloroacetic acid.

USES

Intermediate: in manufacture of carboxymethylcellulose, 2, 4-dichlorophenoxyacetic acid, cyanoacetate, indigoid dyes, thioglycolic acid, glycine (aminoacetic acid) and other commercial chemicals.

• You can count on the quality of Hooker Monochloroacetic Acid. Every step in its manufacture is strictly controlled to maintain high standards of uniformity.

The product is packaged as a fine flake material, ready for use.

Deliveries are scheduled with care to meet your production needs and keep undesired inventory at a minimum.

Competent technical service men assist your plant personnel in safe handling and proper use of monochloroacetic acid and other Hooker products.

Finally, Hooker research and development groups are constantly at work improving production methods, and finding ways to make monochloroacetic acid and other Hooker Chemicals more useful to you.

For full information on Hooker Chemicals, write for General Products List No. 100. Address your request to Hooker Electrochemical Company, 15 Forty-Seventh Street, Niagara Falls, N. Y.

From the Salt of the Earth

HOOKER ELECTROCHEMICAL COMPANY

NIAGARA FALLS • TACOMA • NEW YORK • CHICAGO • LOS ANGELES

HOOKER CHEMICALS

When inquiring check CP 8217 on handy form, pgs. 2-3

Exposed 3747 hours to H_2SO_4 without corroding . . .

solutions ranged to 58% conc; temperature at 158°F

One-half inch square steel rods at a West Virginia firm were exposed to H_2SO_4 at concentrations from 0 to 58% and at a rate of about 50 gallons a minute. Temperature was 70°C (158°F). Rods of Carpenter Stainless No. 20 withstood the conditions for 3747 hours out of a possible 6144 hours (256 days) without corroding.

At the same time the company installed the No. 20 rods, it also included one-half inch rods of Stainless Type 316. These failed four days later. Although applicable for certain dilute solutions of H_2SO_4 and other corrosive agents at low temperatures, Type 316 is not satisfactory under the high temperature and varying concentrations of this type application.

Stainless No. 20 used here consists of 29% nickel, 20% chromium, 3% copper, and 2% molybdenum.

(Manufactured by The Carpenter Steel Co., Dept. CP, Reading, Pa. . . . or for more information check CP 8218 on form, pgs. 2-3.)

Specifications, uses of six plastics

Illustrated twelve-page bulletin contains information on properties, specifications, and uses of six different types of plastic materials — polythene resin, tetrafluoroethylene resin, nylon, acrylic resin, cellulose nitrate plastic, vinyl acetal resin, and cellulose acetate plastic.

Information given for each type of material includes forms available, working techniques, properties, and uses. In addition, a handy two-page reference chart lists numerous mechanical, thermal, electrical, optical, and miscellaneous properties.

Bul A-3940 is issued by Polychemicals Dept., E. I. du Pont de Nemours & Co., Inc., Dept. CP, Wilmington 98, Del. When inquiring specify CP 8219 on handy form, pages 2 and 3.

For more information on product at right, specify CP 8220 . . . see information request blank between pages 2 - 3 .

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a Complete 28-page Guide to Antara's Broad Line of Chemical Products

Here's a reference book that you'll want in your catalogue library. It introduces a simplified nomenclature system for Antara Chemical specialties and includes important application suggestions in a wide range of industries.

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If you're not selling detergents

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Oronite can now offer you improved Alkane—the basic raw material used in making the highest quality synthetic detergents. Alkane is available at a consistent low price. In the past seven years, because of expanding production and improved technology, there have been many price decreases on Alkane. Thus Alkane assures you of a stable market price on your finished detergent product.

Our engineering service has a plant design to fit your needs. A large equipment investment may not be required to sulfonate your own detergents from Oronite Alkane—possibly a great amount of your present equipment can be utilized. (Alkane is available in assured supply from three strategically located bulk terminals.)

Our technical assistance is available to you free of charge. Equipment prices, performance data, yields and all other technical information to show you how to make detergents profitably can be furnished on request.

If you are interested in entering the detergent market, or wish to see how economically you can convert your own plant to detergents, address an inquiry to any Oronite office. We will have a qualified representative contact you.

ORONITE CHEMICAL COMPANY

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"World's largest producer of synthetic detergent raw materials"

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2612

When inquiring check CP 8221 on handy form, pgs. 2-3

Reactions that took 24-48 hours now take ½-1 hr . . .

results of sodium dispersions with tremendous increase in surface area over usual Na shot

Uses: For chemical reactions requiring metallic sodium.

Features: Surface area is many times that available with former sodium dispersions — 10-50 microns as contrasted to 1000-2000 microns for conventional sodium shot. Increased surface area is said to accomplish reactions in ½-1 hr that formerly took 24-48 hr. Dispersion form is said to complete reactions without leaving traces of unreacted metal that could present explosion hazards.

Description: These stable sodium dispersions can be prepared in a liquid, gel, or solid form which can be stored, weighed, and fed to reactions under precise control. Suspensions containing up to 50% sodium can be formulated in such media as toluene, xylene, kerosene, naphtha, or other inert vehicles to suit particular applications.

(Stable sodium dispersions are a product of Esmar Chemical Laboratories, Inc., Dept. CP, 150 Broadway, New York 7, N.Y. . . . or for more information check CP 8222 on form, pgs. 2-3.)

Three bulletins cover advantages and applications of aluminum

Industries and specific applications in which aluminum has been used to advantage in a wide range of industries are covered in three bulletins. The first describes industries in which the metal is used, while the second is concerned with aluminum pipe and fittings. The third is about aluminum heat exchanger tubes.

First bulletin, Form AD-278, of eight pages, tells how aluminum withstands the corrosive effects of sulfur and protects the purity of plastics. It also describes successful use of the metal in processing soap and cosmetics, petroleum products, natural gas, chemicals, and foods.

Form AD-197, the second bulletin, of 12 pages, tells where aluminum pipe and fittings are being used. A number of questions are asked and answered, such as why is aluminum pipe used and what are its chief applications? Liquids and gases that can be carried safely in aluminum pipe and those that cannot are tabulated. Considerable information is given on methods of installing aluminum pipe.

Third bulletin, AD-186, of 26 pages, tells what alloys of aluminum are available for heat exchanger tubes and discusses how this type of equipment is fabricated. Specifications, heat transfer data, working pressures, and other properties are presented.

Forms AD-278, AD-197, and AD-186 are issued by Aluminum Co. of America, Dept. CP, 801 Gulf Building, Pittsburgh 19, Pennsylvania. When inquiring specify CP 8223 on handy form, pages two and three.

ADVERTISEMENT—*This entire page is a paid advertisement* *Prepared by U. S. Industrial Chemicals Co.*

U.S.I. CHEMICAL NEWS

March ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1953

U.S.I. Announces Booklet On High Surface Sodium

High Surface Sodium — an important new development in industrial use of metallic sodium — is the subject of a new booklet now available from U.S.I.

National Distillers Chemical, the division producing metallic sodium sold by U.S.I., has developed simple techniques for depositing colloidal films of sodium on inert, high surface area solids such as salt, soda ash, carbon, aluminia, and sand. The resulting sodium-coated particles are free-flowing, and, since the sodium has a high surface-to-weight ratio, it is immediately available for reaction.

Provides Many Advantages

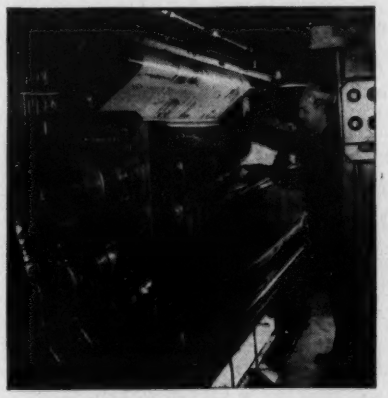
Used in this form, the complete and rapid reaction of sodium provides such advantages as easier reaction control, adaptation to continuous operation, dry-way reactions, safe operating procedures, and high yield. Research indicates that High Surface Sodium is useful in reducing metal salts and oxides to finely divided metals; in purifying gases, hydrocarbons and ethers; for preparing sodium hydride and sodamide for use *in situ;* and as a catalyst for hydrocarbon cracking, polymerizations, and rearrangement reactions.

National Distillers Chemical does not produce High Surface Sodium. However, technical assistance on the preparation and use of this form of sodium is available on request from U.S.I., as is the above booklet which covers the development of the process.

U.S.I.'s Ink Resin Research Continues to Pace Advances in High-Speed Printing Methods

Recent Developments Include New Phthalic, Non-Phthalic Alkyds; Hard Resins for Heat Dry Inks and Rotogravure; Others for Gloss Varnishes for Mixing, Overprinting, and Quick Set Inks

U.S.I.'s Printing Ink Resin Department recently reported a number of new developments which emphasize the company's continuing research program aimed at producing more and better resins for specific printing ink uses. Modern, high-speed printing processes are undergoing constant changes and improvements. As a result, there is a steady need for ink resins with special improved properties to allow ink makers to keep in step with the numerous advances in the art of printing. To this end, U.S.I. has for years maintained an active research program devoted entirely to the printing industry's requirements. U.S.I.'s ink resin line now covers almost every present-day printing need.



Research such as U.S.I.'s, leading to more and better resins, helps provide the printing industry with the special inks required by today's high-speed, precision methods.

New Arochem 533 Resin

One of the company's recent developments is its new, improved Arochem 533 — a hard resin for gloss mixing and overprint varnishes. It is easily soluble in 400° F. cooks in most oils, and it is equally useful in 585° F. cooks

MORE

IN MEMORIAM
Seton Porter, 1882-1953

Funeral services were held February 9th for Seton Porter, founder and Chairman of the Board of National Distillers Products Corporation.

Mr. Porter was a graduate of Yale University and subsequently was associated with the engineering firm, Sanderson & Porter. In 1924, he helped to found the National Distillers Products Corporation, serving as its first President until 1949 when he became Chairman of the Board.

His knowledge of industrial engineering and modern business methods contributed much to the progress of chemical, aviation, and motion picture concerns, and his loss will be keenly felt by all who were associated with him.

Uses for Curbay Products Seen Increasing

Molasses Stillage Products Derived from Alcohol Fermentations Useful as Foundry Binders, Coal Conditioners, Fermentation Aids

Industrial use of U.S.I.'s Curbay products — Curbay Binder, Curbay X, and Special Liquid Curbay — is on the increase, it was reported recently. Manufactured exclusively by U.S.I., these products are concentrated forms of molasses stillage obtained from alcohol fermentations. Industry has found them increasingly useful as binders for such materials as foundry cores, molds, briquetting compositions, case hardening compounds and abrasive compositions. Curbay X is a dried powder which contributes to improved efficiency of coal combustion, according to the report.

Foundry Aid

In foundry practice, the outstanding advantages of these products, as compared with such materials as molasses, are excellent mixing properties, non-fermenting characteristics, and economy. Special Liquid Curbay can be used very satisfactorily for spraying molds or cores to increase surface hardness, it is said, and Curbay X (Curbay Binder in dry form) can be used in sands for either air-dried or oven-dried cores and molds. Either of these products may also be used as a partial substitute for core oil in quantities depending on individual conditions.

Combustion Aid

Because of their reported catalytic action and favorable effects on coking properties, Curbay products can be used along with other materials to upgrade inferior type coals and to improve the condition of clinkers and ashes. Curbay products, when used along with other binders, are very desirable ingredients for specially formulated coal briquettes.

Fermentation Aid

Because of stimulatory effects of Curbay products in promoting microbial growth, they are finding large scale usage in composting and special antibiotic fermentations.

Special Uses

Due to the presence of natural gums from the original cane molasses, these products are useful in the manufacture of specialties wherein small additions improve colloidal dispersions in emulsions, cements, flotation agents, catalysts, carriers, etc.

Further information on industrial uses of Curbay products may be obtained by writing U.S. Industrial Chemicals Co., Division of National Distillers Products Corporation, 120 Broadway, New York 5, N. Y.

New Painting Guide Offered

A quick reference index and guide to painting problems encountered in industry is now available in the form of a four-page folder, according to a recent announcement. Such maintenance problems as painting of metal for rust control, painting without odor, protection of concrete, and protection against chemicals and corrosion are covered.

March ★ **U.S.I. CHEMICAL NEWS** ★ 1953

CONTINUED

New Printing Ink Resins

to body oils. Its outstanding properties include high viscosity as dissolved, pale color, good drying, and scuff and scratch resistance with gloss.

Both this resin and Arochem 605 are suited for gloss oleoresinous varnishes and quick set ink varnishes made soluble by a small amount of strong solvent, drying oil, or U.S.I.'s Aroplaz printing ink alkyds. These two resins can be used with Arochem 534 or Arochem 359 as solubilizing resins. Gloss varnishes and quick set varnishes made with the above materials can be printed by letterpress or by lithographic processes.

Aroplaz 1271 Series Extended

Another recent development is the extension of the 1271 series of U.S.I.'s Aroplaz alkyds to make these resins available in a wider range of printing ink varnish bodies. Aroplaz alkyds are long oil, phthalic alkyds, designed for use alone or in combinations as vehicles particularly well suited to letterpress and litho uses. They can now be obtained in litho body numbers which include 00, 0, 1, 3, 5-6, and 8, all with 100 per cent solids content. Other U.S.I. alkyds are available in 100 per cent solids content of plastic body, and can be made in solutions of 70 to 90 per cent solids, dilutable with printing ink high boiling solvents.

Other recent developments in U.S.I.'s line of ink resins include new non-phthalic alkyds of litho varnish bodies including numbers 0, 1, 3, and 6, and an intaglio steel plate varnish alkyd, No. 00 body, which has good grinding, wiping, and drying properties for wet or dry paper.

Bromine Safety Outlined

Safety measures and regulations which should be followed in handling, storing, shipping and disposing of bromine are detailed in a new safety booklet. First aid measures and medical procedures in emergencies are included.

Find 'Serenades' Improve Many Chemical Reactions

"Sonochemistry", the science that deals with the chemical effects of sound waves, may one day furnish the means for homogenizing milk, sterilizing water supplies, and even doing the family laundry, all with sound, a meeting of chemists was told recently. Ultrasonic waves, it was explained, can be used to change various materials both chemically and physically. Examples of chemical reactions which can be induced include the formation of hydrogen peroxide from water containing dissolved oxygen, the formation of chlorine gas from carbon tetrachloride, and modification of chemical properties of plastics. Physical changes so far obtained with high intensity waves include the homogenization of milk, the mixing of paints, and even the suspension of mercury in water and oil, it was said. Laundering and sterilizing procedures are also possibilities.

New Surfactant for Paints Speeds Mixing of Pigments

A non-ionic surface active agent recently introduced on the market can save up to 50 per cent in time required to mix and disperse pigments in paints, enamels, printing inks, putty and caulking compounds, it is claimed. The product is an amber colored, free-flowing liquid which is soluble or miscible in most vehicles and thinners, including raw, bodied and blown oils, petroleum, aromatic, ester, and ketone type solvents, and phenolic, maleic and penta type varnishes and alkyds. When used in paints, it is said to retard hard settling, to control sagging and running, and to overcome silking and flooding. Because of the more thorough wetting and better dispersion that it provides, it tends to intensify and develop color strength and to increase the floss of films. The agent does not affect the viscosity or drying time of the finished product, and tests indicate it has no effect on the weathering characteristics of paint films, according to the manufacturer's announcement.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U. S. I.

To impart "glass-like" hardness to paint films, a new zirconium-based drier is available which is also claimed to improve gloss, reduce hazing, and to increase film adhesion without embrittlement. **(No. 900)**

An unusually tear-resistant base fabric for lightweight, waterproof goods is woven of flat, ribbon-like continuous multifilament yarns and can be combined with coatings of plastic and natural or synthetic rubber, the manufacturer states. **(No. 901)**

Push-button shoe shines are now available in the form of foam packaged in pressure cans. User turns the can upside down, releases a small mound of foam on the shoe, then buffs to a high polish. **(No. 902)**

New fluorescent chalks for lecture and classroom use are available in 5 brilliant colors, can be activated by black or blue light to add a new dimension for vivid color effects, according to the maker. **(No. 903)**

Rare wood grains and marbles are now reproduced in natural color on thin plastic film for application as veneer to wood, glass, metal, plastic, plaster, or composition. When dry, films can be varnished or waxed. **(No. 904)**

A sliding lubricant for windows, drawers, other wood and metal moving parts, is said to eliminate squeaking, to resist rust, corrosion, and wear, and to reduce friction. **(No. 905)**

Areas and volumes can be measured as easily as lengths, it is claimed, with a plastic template for scale drawings which performs basic functions of a slide rule, has no moving parts, and measures cylinders and circles as well as rectangles. **(No. 906)**

To bond vinyl plastics to themselves, and to wood, metal, glass, acrylic plastics, cloth, and many other materials, new adhesives are available which are claimed to require no heat or pressure, to penetrate surface quickly, and to have very fast initial tack or bond. **(No. 907)**

Chlorine concentrations of solutions can be determined on the spot with new tablets which, when dissolved in water, develop different colors with different strengths of chlorine. **(No. 908)**

Radiant heating panels of conductive rubber, for attachment to ceilings like wallpaper, are now available for supplementing heat in attics, garages, etc., or for adding radiant heat to a new room. **(No. 909)**

PRODUCTS OF U. S. I.

ALCOHOLS
Amyl Alcohol (Isoamyl Alcohol)
Butanol (Normal-Butyl Alcohol)
Fusel Oil—Refined
Propanol (Normal-Propyl Alcohol)

Ethanol (Ethyl Alcohol)
Specially Denatured—all regular and anhydrous formulas
Completely Denatured—all regular and anhydrous formulas
Pure—190 proof U.S.P., Absolute—200 Proof
Solox*—proprietary solvent—regular and anhydrous

ANTI-FREEZE
Super Pyro* Anti-Freeze
U.S.I. Permanent Anti-Freeze

ETHERS
Ethyl Ether, U.S.P.
Ethyl Ether, Absolute—A.C.S.

ACETONE—A.C.S.

ANSOLS
Ansol* M
Ansol* PR

ACETIC ESTERS
Amyl Acetate—Commercial and High Test
Butyl Acetate
Ethyl Acetate—all grades
Normal-Propyl Acetate

OXALIC ESTERS
Dibutyl Oxalate
Diethyl Oxalate

PHTHALIC ESTERS
Diamyl Phthalate
Dibutyl Phthalate
Diethyl Phthalate

OTHER ESTERS
Diatol*
Diethyl Carbonate
Ethyl Chloroformate

RESINS (Synthetic and Natural)
Arochem*—modified types
Arodure*—urea-formaldehyde resins
Arofene*—pure phenolics
Aroflat*—for special flat finishes
Aroflint*—room temperature curing phenolic
Aroplaz*—alkyds and allied materials
Aropol*—copolymer modified alkyds
Ester Gums—all types
Natural Resins—all standard grades

INSECTICIDE MATERIALS
Allethrin
CPR Concentrates: Liquid & Dust
Piperonyl Butoxide
Piperonyl Cyclonene
Pyrenone* Concentrates: Liquid & Dust
Pyrethrum Products: Liquid and Dust
Rotenone Products: Liquid and Dust

INSECTIFUGE MATERIALS
Indalone*
Triple-Mix Repellents

INTERMEDIATES
Acetoacetanilide
Acetoacet-ortho-chloroanilide
Acetoacet-ortho-toluidide
Acetoacet-para-chloroanilide
Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Sodium Oxalacetate

FEED PRODUCTS
Calcium Pantothenate (Feed Grade)
Curbay B-G*
DL-Methionine (Feed Grade)
Niacin, U.S.P.
Riboflavin Concentrates
Special Liquid Curbay*
U.S.I. Vitamin B_{12} and Antibiotic Feed Supplements
Vacatone* 40

OTHER PRODUCTS
Acetaldehyde
Caustic Soda
Ethylene
IPC (Isopropyl-N-Phenyl Carbamate)
CIPC
Liquid Chlorine
Metallic Sodium
Methionine (Pharm.)
Nitrocellulose Solns.
Propionaldehyde
Propionic Acid
Sulfuric Acid
Urethan, U.S.P.

*Reg. U.S. Pat. Off.

U.S.I INDUSTRIAL CHEMICALS CO.
Division of National Distillers Products Corporation

120 BROADWAY, NEW YORK 5, N. Y. BRANCHES IN ALL PRINCIPAL CITIES

Almost pure white mat fiber glass introduced . . .

designed specifically for plastic reinforcement

Uses: Reinforcing plastics of any color. Type GP is made especially for matched metal die molding and is designed to resist the washing and tearing pressures exerted by molding action. It can also be used in periodic or continuous dip impregnation systems where retention of mat integrity during and after impregnation is required.

For parts which require rapid and complete wetting of the fiber glass under atmospheric conditions, Type HSB is offered. It is made particularly for atmospheric cure work produced by bag molding, tailoring or hand lay up methods. Extremely low pressure and bake cure parts may also be reinforced with HSB.

Features: Mat is almost pure white and highly uniform in weight.

Description: Uniformat is a fiber glass chopped strand reinforcing mat. As mentioned, it is offered in Types GP and HSB.

Uniformat is made by cutting 14,000 yards per pound, continuous strands, into 2-inch lengths and depositing in a random pattern in the form of continuous length of firm, bonded mat.

Fiber glass strands used each contain 204 continuously drawn filaments. Mat integrity is sufficiently high to allow material to be handled, tailored and laminated without tearing.

Roll width of Uniformat is 50 inches, unless otherwise specified.

(Being introduced by Ferro Corp., Fiber Glass Division, Dept. CP, 200 Woodycrest Ave., Nashville, Tenn. . . . or for more information check CP 8224 on handy form between pages 2 and 3.)

For more information on product at left, specify CP 8225 . . . see information request blank between pages 2-3.

For more information on product at right, specify CP 8226 . . . see information request blank between pages 2-3.

At the turn of a valve...

By simply opening a valve, you can put Heyden Formaldehyde to work in your process. Your pumps and pipe lines will deliver from your storage tanks a reliable raw material which will assure top quality in your finished product.

With Heyden Formaldehyde in your tanks, you have the advantage of these important features:

- Highest purity.
- Constant uniformity and assay.
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- Availability as Formaldehyde Solution N.F. and 37% Methanol-free Formaldehyde.
- Shipment in tank cars, tank trucks, 475 lb. drums, 100 lb. carboys and 1, 5 and 9-lb. bottles.

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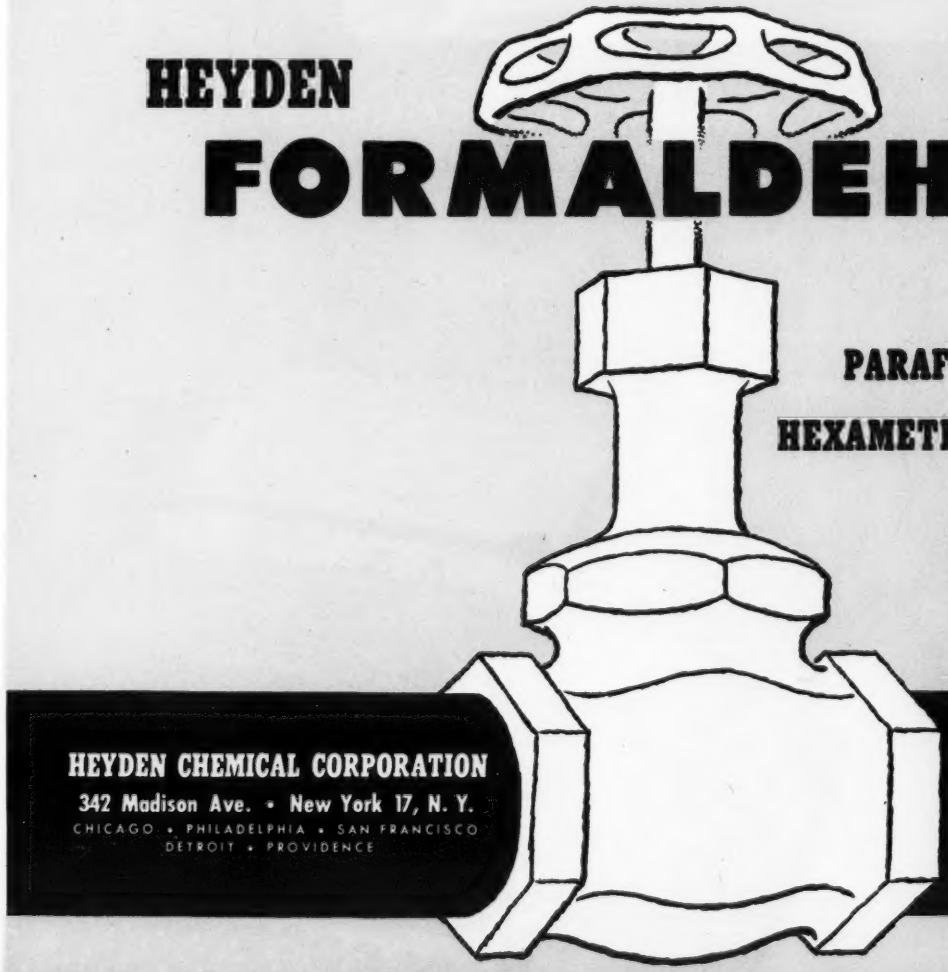

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HEXAMETHYLENETETRAMINE

FINE HEYDEN CHEMICALS

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NEOMYCIN • PARAFORMALDEHYDE
PARAHYDROXYBENZOATES • PENICILLIN
PENTAERYTHRITOLS • PROPYL GALLATE • RESORCINOL
SALICYLATES • SALICYLIC ACID • STREPTOMYCIN

NEW CHAPTERS IN AN OLD STORY*

From knowledge gained by long experience, Niagara is constantly adding new chapters to the continued story of chemicals in industry.

NIALK® Carbonate of Potash

Unsurpassed for purity and uniformity, NIALK Carbonate of Potash is widely used in the development and production of glass of exceptional clarity and freedom from flaws for both optical and decorative use.

Strict production standards plus continuing application studies have earned for this NIALK product—as for every NIALK product—industry's unqualified acceptance.

NIAGARA ALKALI COMPANY

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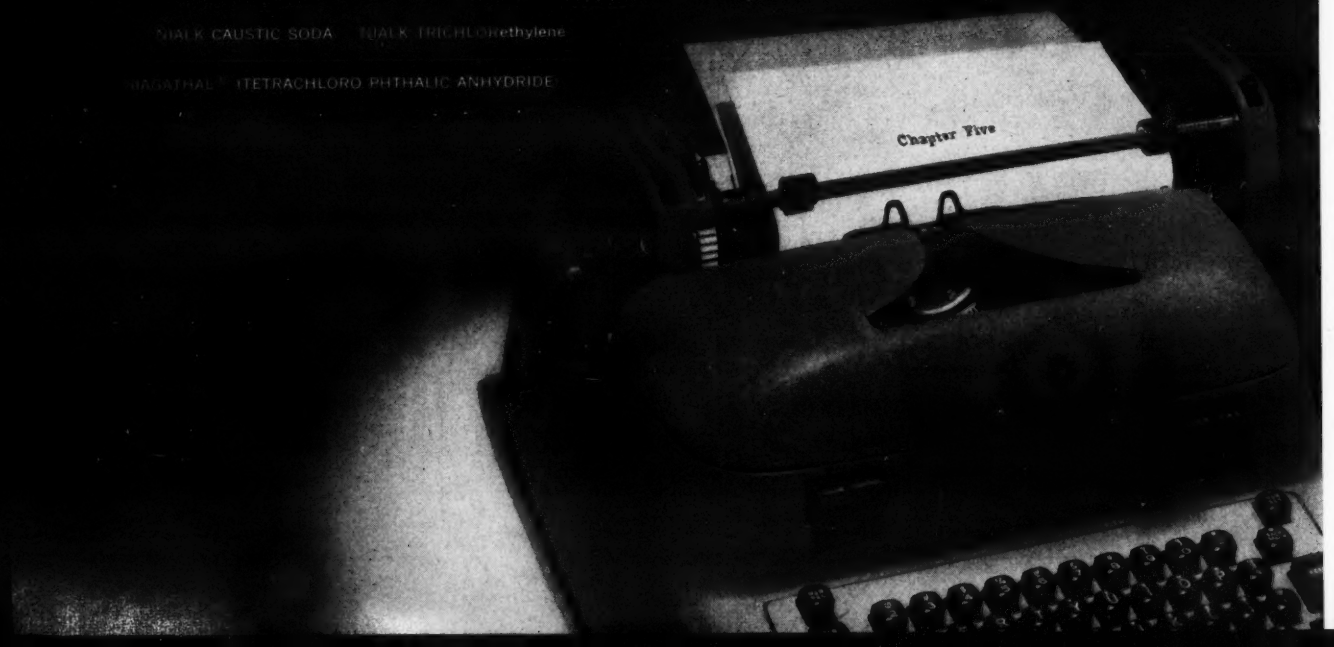
NIALK CARBONATE OF POTASH NIALK PARADICHLOROBENZENE
NIALK CAUSTIC SODA NIALK TRICHLOROethylene
NIAGATHAL® TETRACHLORO PHTHALIC ANHYDRIDE



Produces pliable and extremely stable gels . . .

promising as suspending agent in organic liquids

Uses: Widely flexible gelling properties make product applicable in organic liquids.

Features: Gels formed are soft, pliable and show excellent stability. Complete freedom from separation, bleeding and sedimentation characterizes many sample materials gelled — even after months of shelf storage.

Description: Anfrol Base A is a member of a class of amide gelling agents. It is described in a US Patent 2,594,786 (to Swan-Finch Oil Corp.).

A typical material of this class, N-lauryl-N_1-lauryl adipamide was found to gel the following solvents and vehicles: acetone, carbon disulfide, isopropyl alcohol, carbon tetrachloride, ethylene dichloride, xylene, benzene, naphtha, and linseed oil.

(Material is available in any quantity from Swan-Finch Oil Corp., Dept. CP, 338 Hudson St., Hakensack, N. J. . . . or for more information check CP 8227 on handy form, pages 2 and 3.)

Describes manufacture of phosphoric acid

Reprint of chapter from technical monograph discusses various aspects of the manufacture of phosphoric acid by the sulfuric acid or wet process. Chemistry of strong acid production is outlined and major manufacturing developments are traced down to the present day.

Twelve pages are devoted to types of equipment necessary in the operation and various types now being employed in plants are illustrated. By products, materials of construction and installations are discussed.

"The Manufacture of Phosphoric Acid by the Wet Process" is issued by The Dorr Co., Dept. CP, Barry Pl., Stamford, Conn. When inquiring specify CP 8228 on handy form, pages 2 and 3.

For more information on product at left, specify CP 8229 . . . see information request blank between pages 2-3.

65% dielectric strength retained after 2000 hr at 250 degrees C . . .

silicone insulating varnish has unusually good craze and flex life

Uses: Electrical insulating varnish for coating glass cloth and sleeving and for bonding mica-glass combinations.

Features: Reported to have more than 3 times the dielectric life of conventional silicone varnishes in current commercial use. Initial dielectric strength, for example, is in the range of 1600-1900 v/mil; *however*, 65% of this value is still retained after 2000 hr at 250°C.

Description: Silicone Varnish 994 has unusually good craze and flex life — tests made according to ASTM D115 indicate that the craze life is in the range of 3000 hr at 250°C and 800 hr at 300°C (or 3 times that of earlier silicone varnishes). Flex life under the same conditions is in the range of 1000 hr (about 4 times that for earlier materials). Typical physical properties are outlined below:

Solids content (min), %	49
Color	light straw
Viscosity @ 25 C, cp	80-125
Specific gravity @ 25°C	1.00-1.02
Flash point, °F	70-90
Weight loss (3 hr @ 250°F) %	7

(Product of the Dow Corning Corporation, Dept. CP, Midland, Mich. . . . or for more information check 8230 on handy form, pages 2 and 3.)

Processed fatty acids feature wide range of applications

Ranging from cosmetics and toiletries to lubricating greases and oils, applications of processed fatty acids encompass wide range of products. Requirements of these products necessitate special processing of natural products to release constituents of known composition and predictable behavior. The fatty acid industry performs the function of providing products of fat splitting with known and useful characteristics.

Twenty-page booklet covers technology and usage of fatty acids from a comprehensive point of view. It describes fat-splitting processes, separation of individual acids such as stearic and oleic, and methods used in purification and chemical modification of natural acids. Composite flow sheet shows how various animal fats and vegetable oils are processed to yield many specific products.

Convenient chart summarizing uses of many fatty acids supplements survey of major uses of the acids as outlined in the text material. Common terms and tests used in specifying fatty acids, such as titer, iodine value, acid value, and others are explained.

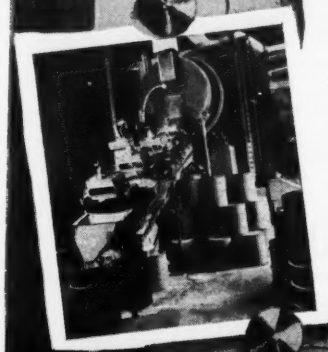
"Fatty Acids Prepared for Action from Nature's Chains" is issued by Fatty Acid Div., Assocation of American Soap & Glycerine Producers, Inc., Dept. CP, 295 Madison Ave., New York 17, N. Y. When inquiring specify CP 8231 on handy form, pages 2 and 3.

•Davison Bulletin•

Check for application

AVAILABLE FOR THE FIRST TIME

Organic Silicofluorides



Davison's Research and Development Department has devised a method of commercially producing a series of silicofluorides which have previously been known only as laboratory curiosities. Now available:

Methylamine Silicofluoride ($C_2H_{12}N_2SiF_6$)
Dibutylamine Silicofluoride ($C_{16}H_{40}N_2SiF_6$)
Ethylhexylamine Silicofluoride ($C_{32}H_{72}N_2SiF_6$)
Aniline Silicofluoride ($C_{12}H_{16}N_2SiF_6$)
Rosin Amine Silicofluoride ($C_{40}H_{66}N_2SiF_6$)
Morpholine Silicofluoride ($C_8H_{20}N_2O_2SiF_6$)

Preliminary use research has led Davison's technical representatives to believe that there are many varied applications for these products.

The properties of the materials vary widely. The molecular weight is from 206 to 719; fluorine content 18.2% to 55.17% and pH in 5% water solution, 2.8 to 4.2.

For full chemical and physical properties write for Product Data Sheet on Davison's Organic Silicofluorides, today.

Anti-Blocking Agent

Davison now has available a series of high quality, uniform fine sized silicas. The amorphous form of silica possesses unique characteristics when compared to crystalline silicas, e.g. sand. Silica gel, a highly porous form of amorphous silica, characteristically has a large pore volume and surface area. For example, when divided into fine particles less than 20 microns, the porous high surface area characteristics continue to exist, making the product specific for a wide variety of special applications. The product is white in appearance and completely uniform in chemical and physical characteristics.

Commercial forms of silica gel available differ primarily in pore size, surface area, and apparent bulk density. These differences, in addition to the variations produced by surface treatments and particle sizing, have resulted in a series of finely divided silicas adaptable to diversified uses. Many of these grades are now available for anti-blocking and matting plastic sheeting.

Mail coupon for complete information, chemical and physical characteristics, and suggested applications, or contact your Davison Field Service Engineer.

FREE Literature Available On Method Of Determining Fluid Catalyst Particle Size

An analytical method for ascertaining the size distribution of either a fresh or used catalyst developed specifically to serve requirements of the industry. For your free copy, use the coupon.

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Producers of:
Catalysts, Inorganic Acids, Superphosphates, Phosphate Rock, Silica Gels, and Silicofluorides. Sole Producers of Davco Granulated Fertilizers.

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☐ Fine Sized Silicas

☐ Method of Determining Fluid Catalyst Particle Size

Name.....Title.....

Company.....

Street.....

City.....Zone....State.....

When inquiring check CP 8232 on handy form, pgs. 2-3

Wyandotte Caustic Soda is now available in convenient open head drums!

Look at these advantages:

Visible Supply!

No more guesswork. You can instantly see how much caustic remains in the drum.

Easily Accessible!

No more tilting, or turning the drum upside down to get at the remaining caustic.

Safety!

The rolled edges and open head protect the user from cuts and caustic burns.

The high quality of Wyandotte caustic in the new open head drums is unchanged. You'll still find among Wyandotte's many grades and forms the caustic soda best suited to your needs — for soaps, detergents and metal cleaners; food processing; paints, inks and dyes; for insecticides and textiles.

You'll find Wyandotte a reliable and helpful source for all alkalies — caustic, soda ash, bicarbonate of soda, chlorine, calcium chloride. Write Wyandotte for our new caustic soda booklet . . . for help in specifying the right grade for your processes, consult Wyandotte.

For Pilot-Plant Operations

Wyandotte Mercury Cell Caustic (50% liquid) can be obtained in nickel drums for pilot-plant operations, as well as in commercial quantities. This reagent-grade caustic is ideal for pilot-plant use, since the grade need not be changed when you convert to commercial production. This eliminates the "bugs" that often arise when a different grade is used in production than in the pilot-plant process.

WYANDOTTE CHEMICALS CORPORATION
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OFFICES IN PRINCIPAL CITIES

Wyandotte CHEMICALS

When inquiring check CP 8233 on handy form, pgs. 2-3

Aids Kier boiling and dyeing of textiles

Uses: Suggested as a dispersing and wetting agent in the continuous caustic boil off of cottons, as a dye assistant and wetting agent in the vat and sulfur dyeing of cottons, as a dyeing assistant in the dyeing of rayons and synthetics on a jig or beck, and as an assistant in Kier boiling.

Features: In continuous boil-off of cottons, agent clears up the bath and prevents the scum from redepositing on the interstices of the fabric. On heavy cotton fabrics it permits considerably faster processing.

In vat and sulfur cotton dyeing, it clears up the bath and provides good dispersion and penetration of dyestuffs.

In dyeing of rayons and synthetics, it prevents pectin and gum deposits on the fabric.

Description: Barisol BRM is a 30% solution of a potassium salt of the phosphate of a complex multicarbon alcohol. It is anionic and designed specifically for use with dilute acid, alkaline, and neutral solutions as a dispersing agent, dye assistant, and wetting agent.

Sequestering and emulsifying powers are good, withstands boiling in 6% caustic solution for 24 hr, not affected by hard water, and pH of 0.1% solution is 6.5-7.0.

(Barisol BRM is a product of the Dexter Chemical Corporation, Dept. CP, 819 Edgewater Rd., New York 59, New York . . . or for more information check CP 8234 on handy Reader Service slip between pages 2 and 3.)

Plasticizing effect is between castor oil and phthalates

Uses: Plasticizer for nitrocellulose and cellulose acetate-butyrate and polyvinyl chloride resins.

Description: Pycal 76, properly formulated in nitrocellulose lacquers, is said to impart excellent resistance to cold-checking, printing, and alcohol or water spotting. It has a higher solvency for nitrocellulose than does castor oil. Plasticizing action is intermediate between that of castor oil and the phthalates.

As with other lacquer ingredients, direct substitution on a pound for pound basis for other plasticizers in an existing formulation is generally not the most desirable method for utilizing its properties to best advantage. Reformulation is to be preferred as the best means of achieving the maximum advantage from Pycal 76 in any particular application.

Pycal 76 is not recommended for use in lacquers where high resistance to ultraviolet light is required. Plasticizer has good solvency for cellulose acetate butyrate. It should be of interest to formulators of hot-dip metal coatings. Molded articles containing Pycal 76 are reported to have high impact strength,

good clarity, low volatility loss, and high resistance to moisture.

It serves as a good auxiliary plasticizer for polyvinyl chloride and polyvinyl chloride-acetate resins. Use with tricresyl phosphate is particularly recommended. Such compositions are said to have better heat stability and low temperature flexibility than the straight tricresyl phosphate compositions. It is of interest in filled compositions where low temperature properties can be utilized without excessive ultraviolet light attack.

(Product of the Atlas Powder Company, Dept. CP, Wilmington 99, Delaware . . . or for more information about this product check CP 8235 on handy form, pages 2 and 3.)

Few tablespoons in the washer moth-proofs woolens . . .

DDT is ingredient used to protect clothes against feeding larvae for one year

Woolens that come out of the wash clean and moth-proof is the promise held out by the USDA's recent development, EQ-53. The latter is essentially a mixture of DDT and other chemical carriers and can be used on washable woolens such as blankets, sweaters, etc.

About one tablespoon of EQ-53 per pound of clothing is added to the washing machine, wash basin or tub. Comparable tests by USDA revealed that the treated woolens were completely protected against the feeding larvae of both cloth moths and carpet beetles for more than a year. Requiring only the normal precautions necessary in handling any insecticide, it is anticipated that the low cost insecticide will be on the market this spring.

(Additional information can be obtained from the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, Washington 25, D. C.

Presents factual information on industrial fabrics

Twenty-four-page illustrated bulletin gives word-and-picture round-up of information on industrial fabrics, their applications, and developments in the field. Text and illustrations follow operations from the production of fiber to end use in many different types of industry.

Comprehensive discussion is devoted to cotton, rayon, acetate, Nylon, acrylic fibers, polyester fibers, fibrous glass, vinyl fibers, and protein fibers. Individual sections are concerned with yarns, weave, determination of fiber and construction, fabrics for rubber industy, fabrics for coating, fabrics for laminated plastics, fabrics for filtration, and fabrics for miscellaneous purposes.

"Modern Textiles for Industry" is issued by Wellington Sears Co., Dept. CP, 65 Worth St., New York 13, New York. When inquiring specify CP 8236 on handy Reader Service slip between pages two and three.

FREEZES HARD-TO-GRIND MATERIAL

CO_2 — in liquid or solid form — plays a new role in still another vital operation: pulverizing certain foodstuffs, pharmaceuticals, resins, plastics and similar "soft" goods. By subcooling viscous materials to a brittle state, CO_2 makes them easier to grind and at the same time eliminates high temperatures that may injure heat-sensitive ingredients. CO_2, an inert gas, also helps to prevent flash fires and oxidation. And CO_2 is non-corrosive . . . will not affect ordinary cast iron or steel grinding mills.

CO_2 — in solid, liquid or gaseous form — is finding wider and wider application with today's research technicians. A refrigerant . . . chemical . . . inert gas . . . pressure medium . . . and carbonation agent — it offers a unique combination of properties. Often, two or more of these properties can be employed in a single operation! Low cost and ready availability make it a natural for hundreds of heretofore untried uses in a score of industries. If you'd like further information about CO_2 — or specific information about its applications in grinding operations — write today!

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A DIVISION OF AIR REDUCTION COMPANY, INCORPORATED

General Offices: 60 East 42nd Street, New York 17, N. Y.

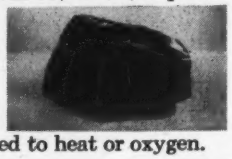
at the frontiers of progress you'll find AIR REDUCTION PRODUCT

When inquiring check CP 8237 on handy form, pgs. 2-3

General Mills Announces Lower Prices On Improved Polyamide Resins

Full Line Stabilized for Improved Color and Heat Stability

The price of General Mills' Polyamide Resins has been reduced to a new low on purchases over 8,000 pounds. Current prices have been cut from 55¢ to 48¢ a pound in quantities of 8,000 to 20,000 pounds, and from 50¢ to 46¢ on 20,000 to 40,000 pounds.



Color stability has been improved. Also, Polyamide Resins are now more stable when exposed to heat or oxygen.

Polyamide Resins are used as coatings on paper label stock, bag seals, laminated paper, foils, glassines, and moisture-proof cellophane. They impart heat sealing properties and resistance to water, water vapor, grease, solvents and chemicals. Three basic types are available, Polyamide Resins Nos. 93, 94 and 95. All three may be coated as hot melts or solvent solutions.

PRICES CUT
UP TO 7¢ LB. ON

POLYAMIDE RESINS!

Now! Get Polyamide Resins for less in quantities over 8,000 pounds. As much as 7 cents a pound less!

Because sealing temperature is low (starting at 176°F.) compared to other heat sealing coatings (typical polyvinyl acetate and ethyl cellulose formulations seal starting at 212°F.) Polyamide Resins reduce danger of damaging the paper.

Polyamide Resins are soluble in many common solvents such as n-butanol, and blends of 70% toluene plus 30% isopropanol, but are insoluble in such solvents as acetone and methanol.

The flexibility of Polyamide Resin gives effective moisture and grease protection on creased as well as flat surfaces.

Polyamide Resin is an excellent overprint coating, too. On labels, a Polyamide Resin film only half the thickness of polystyrene, a common overprint varnish, gives equal gloss.

Important Physical Characteristics:

- Low Melting Point
- Heat Sealability
- Non-Blocking
- High Gloss
- Grease and Oil Resistance
- Scuff Resistance
- Water and water vapor Resistance

TO ORDER

Polyamide Resins, or for additional data, address:

General Mills, Inc.

Chemical Division, Minneapolis 1, Minnesota

Send Name, Firm Name and Address

PHONE: ATlantic 1144

When inquiring check CP 8238 on handy form, pgs. 2-3

materials

Isophthalic nucleus available in low-melting, easily processed form

Dimethyl isophthalate is reactive intermediate for making plasticizers, alkyds, laminating resins, polymers

USES: Suggested as an intermediate for the preparation of: *Plasticizers* — rapid rate of ester interchange results in economical production of good-performing esters with normal and branched alcohols. In comparison with phthalic anhydride esters, improved low temperature efficiency, low volatility, and good stability have been observed in vinyl plasticizers prepared from DMI.

Alkyds — oil-modified alkyd resins prepared from DMI form tough, long-lasting protective coating films. High viscosity, gel-free alkyds of low acid number can be prepared with wider range of oil modification than is possible with phthalic anhydride-based resins.

Laminating resins — unsaturated polyester laminating resins modified with DMI at the alkyd stage are reported to have greater chain length, and consequently improved toughness in the cured resin.

Polymers — tough, high-melting polyester and polyamide resins can be produced from the reaction of DMI with diamines or glycols. By suitable selection of the diamine or glycol, resins for adhesives, coatings, or plastics may be obtained.

May be used without further chemical processing in the following applications: *Delayed tack and hot melt adhesives, cellulose acetate plastics and lacquers, nitrocellulose lacquers, and rigid vinyl plastics.*

Features: Makes available for the first time the desirable isophthalic nucleus in a low-melting, easily processed form, reports maker.

Description: Technical DMI is a white, crystalline solid, free of acids, anhydrides, mono esters, and ortho phthalic esters. It contains about 15% of the dimethyl ester of terephthalic acid. Typical analysis is shown below:

Dimethyl isophthalate, %	85
Dimethyl terephthalate, %	15
Melting point (capillary), °C	65
Ash	0.0
Acidity (as phthalic acid), %	0.2
Saponification number, found	576
Saponification number, theory	577
Color, Hazen (molten)	50

Reaction of DMI to form esters, as in plasticizers or alkyd resins, is easily carried out using standard esterification equipment. The chemical reaction is one of alcoholysis or trans-esterification rather than esterification. In ordinary esterification, an acid or anhydride is treated with an alcohol, often in the presence of an acid catalyst. Reaction proceeds at an elevated temperature with the evolution of water until substantially all acid or alcohol is exhausted. To prepare isophthalic esters from the dimethyl ester, DMI is heated with a higher alcohol and a basic catalyst, with the evolution of methanol.

Alcoholysis is a rapid reaction compared to ordinary esterification, requires no corrosive catalysts, and gives a product easily freed from its volatile constituent, methanol. The extent of the reaction can be followed by measuring the amount of methanol evolved. One-tenth percent litharge has been found to be a very satisfactory catalyst for alcoholysis in alkyd reactions, and about 0.5% lime to be an excellent catalyst for the preparation of dialkyl phthalates for vinyl plasticizers.

(DMI is a product of the Hercules Powder Company, Dept. CP, Wilmington 99, Del. . . . or for more information check CP 8239 on form, pgs. 2-3.)

Fast-drying varnish economically formulated with heat reactive resin

Hydrocarbon type material forms hard film which resists acids, alkalis, alcohol, and water

ECONOMICAL, fast-drying formulations of serviceable quality can be formed with a heat reactive resin of the hydrocarbon type, according to manufacturer. It is said that the material can be used to advantage even if it is necessary to centrifuge varnish to obtain absolute clarity where required.

Resin is a neutral, unsaponifiable type which exhibits excellent resistance to acids, alcohols, alkalis, and water. It does not darken on exposure to ultraviolet light. Typical properties follow:

Melting point, cube-in-mercury	118°C
Color (manufacturer's scale)	10
Ash, per cent	0.07
Iodine number	160
Viscosity, 70% in Varsol	Z-9

Since resin is heat reactive, a varnish results which may have a slight haze after the reaction with polymerized oil. Improvement in drying and film hardness is particularly evident with the softer drying oils such as linseed.

Vehicles may be prepared by cooking resin with drying oil at a minimum of 535°F (280°C) for 15 to 25 minutes. Although on a laboratory scale this procedure has been found to be generally satisfactory, it may require minor modification in some special cases. Such a cooking process definitely improves the drying time and resistance to gasoline and grease.

(LX-782 resin is product of The Neville Co., Dept. CP, 1938 Neville Island, Pittsburgh 25, Pa. . . . or for more information check CP 8240 on handy form, pages 2 and 3.)

A company name and address . . .

at the end of each editorial article makes it easy for you to follow-up on process-improving ideas you read about in these columns . . . saves you time. Write direct or use the handy Reader Service slip.

THE EDITORS

Glycerine provides the Humectancy

For over 57 years, Carter's has used Glycerine to keep stamp pads moist and free from "stick"... to dissolve and stabilize the materials in Carter's Rubber Stamp Ink. How well does it do the job? Carter's famous "Pump Action" stamp pads, which are guaranteed for 100,000 impressions, outsell all other makes!

Stamp pad inks for all purposes and all types of surfaces present some of the most difficult technical problems in ink-making. Carter's chemists originally selected Glycerine for its unusual combination of properties in making a stamping ink for marking paper and other absorbent materials. Glycerine's humectancy keeps pads from caking. Glycerine acts as a solvent for the dyestuffs and other ingredients in the ink. And Glycerine is non-reactive . . . won't cause rubber stamps to deteriorate . . . actually lengthens the shelf life of both pads and inks.

In hundreds of other applications in other fields, too—as a softener . . . emollient . . . preservative . . . lubricant . . . anti-freeze, Glycerine provides an unmatched balance of properties, ready acceptance, and established freedom from toxicity. For your copy of an informative booklet on Glycerine properties and uses entitled "Why Glycerine?", write Glycerine Producers' Association, 295 Madison Avenue, New York 17, N. Y.

Nothing takes the place of Glycerine

When inquiring check CP 8241 on handy form, pgs. 2-3

Coal hydrogenation yields first product

First product from coal hydrogenation to be offered industry is High Boiling Phenols — available in tank car quantities. The product is a semi-refined mixture of short-chain alkyl-substituted phenols with a distillation range between 230 and 270°C.

Compared with phenolic materials of similar boiling range derived from other sources, High Boiling Phenols has a high degree of meta substitution. This gives it greater reactivity with formaldehyde in the synthesis of thermosetting resins. Such resins can be made without the addition of m-cresol or phenol.

A soluble oil that has good germicidal properties can be made from the product, neutral oils, and emulsifiers.

General reactivity suggests use as an intermediate in the manufacture of phenolic resins (particularly for surface coatings having good chemical, alkali, and soap resistance), phenolic dyestuffs, and in chemical syntheses where ring substitution on a phenol is indicated.

Since few of the phenols in this mixture are hindered, its hydroxyl groups react normally. Non-ionic surface active agents, and organic and inorganic esters may thus be made from this product.

It is further suggested that High Boiling Phenols be tested for uses typical of cresylic acids. These include preparation of mercerizing penetrants, metal cleaners, cresylic-type disinfectants, pharmaceutical products, oil de-emulsifiers, oil refining agents, flotation agents, dye assistants, dye fixatives, preservatives, and scouring agents.

(Product of the Carbide and Carbon Chemicals Division of Union Carbide and Carbon Corporation, Dept. CP, 30 East 42nd Street, New York 17, New York . . . or for more information reader can simply check CP 8242 on handy Reader Service slip between pages 2 and 3.)

Discover aspects of oxidation in lubricants

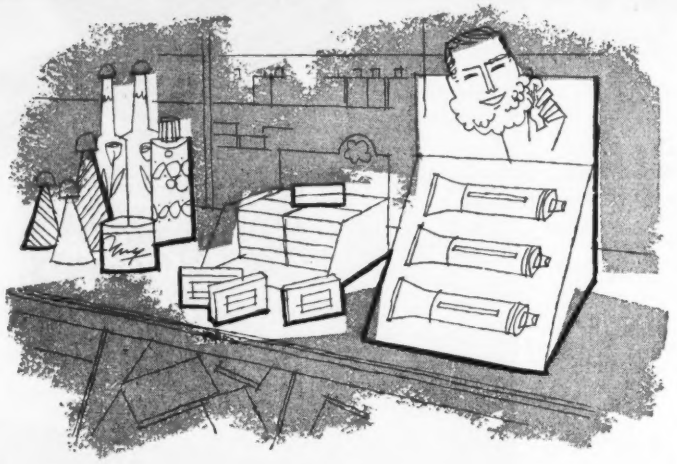
Scientists at the Naval Research Laboratory have found that certain lubricating compositions, which had large amounts of both a certain type of pro-oxidant and a certain type of anti-oxidant, stood up well against deterioration by heat.

Investigating the cause they found that, when certain anti-oxidants are present by themselves in a lubricating composition, their inhibiting effect on self-oxidation in the lubricant is very weak. However, when certain pro-oxidants are also present, the inhibiting effect of the anti-oxidants is very strong.

Pro-oxidants in this case are lithium soaps which are added to lubricating compositions to give them good lubricating properties at low temperatures, under high gear pressures, etc. The anti-oxidants which have the effect described above are certain types or organic compounds of silicon

for your information...

brief summaries of helpful product news



Actamer, New Nonirritating Bacteriostat for Soaps, Shampoos And Shaving Creams, Kills 97% of Odor-Inducing Bacteria

A powerful new bacteriostat that combines several important advantages was described in recent New York meetings of the Chemical Specialties Manufacturers Association, and the Toilet Goods Association.

Small quantities of the bacteriostat, known as Actamer, will be particularly useful in controlling body odors, and may aid in controlling minor skin disorders and complexion problems, according to reports given at the two meetings.

Actamer combines unusual antimicrobial activity with low toxicity and the ability to cling to the skin. Actamer has been shown applicable in deodorant and presurgical scrub soaps, and is reported to show real promise for use in shampoos, lotions, shaving creams and other cosmetics.

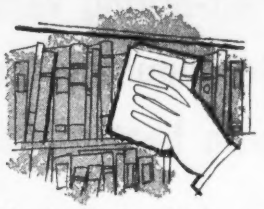
In the papers given at the New York Meetings, the results of extensive hand-washing tests carried out by the Monsanto and by independent laboratories were reported. The tests showed a 97.4 per cent reduction in resident skin bacteria over a 12-day period. The "staying power" of the ingredient also was demonstrated by discontinuing the use of soap containing Actamer. It required over a week for the bacteria count to return to normal.

Reported results of oral toxicity tests indicated a low order of toxicity in rats and rabbits.

Irritation and sensitization were also investigated. Standard patch-test techniques were used on a large number of human subjects. No reactions attributable to Actamer were detected.

For price quotations on this new Monsanto development, clip the coupon and mail it today.

Quick Facts On Phosphoric Acid



Orthophosphoric acid is available from Monsanto as a clear, water-white liquid, miscible with water in all proportions.

Monsanto supplies both 75% and 85% H_3PO_4 as part of a standard line of products.

Monsanto 85% phosphoric acid is N.F. and the 75% fully meets all Pure Food Law requirements. You can obtain it in special 650-pound tight oak barrels; 55- and 15-gallon stainless steel drums; 13-gallon carboys; tank cars and tank trucks.

Write us for price and shipment information, today.

New Booklets Offered On Milmer 1 and Santophen 1

Two new booklets are now available from Monsanto. One is entitled "Santophen 1 . . . a Versatile Germicide." The other is called "Protection Against Rot and Mildew with Milmer 1."

The booklet on Santophen*1 has 16 pages of useful information on this important germicide. It describes the physical and chemical properties of Santophen 1 in both solution and solid form. It discusses in a concise, easy-to-read way the applications of this product in soaps and numerous other products.

The booklet on Milmer*1 reviews the many ways in which this

product can control rot and mildew in textiles, vinyl plastic film, coated fabrics, cordage and other products. It contains interesting performance figures on numerous tests showing the effectiveness of Milmer 1 in these applications. For your copy of either of these informative booklets, mail the coupon.

Special Service Delivers Plasticizer Order in One Day

A purchasing agent of a large chemical plant in an emergency had to get forty drums of dibutyl phthalate and get them within hours. What did he do? He called Monsanto.

Here's what happened. Monsanto received the order at three o'clock on a Friday afternoon. Soon wires were buzzing in production and shipping.

In only a matter of hours, on the evening *of that same day* a Monsanto truck had delivered the order to the customer nearly 400 miles away.

The next day a wire from this customer arrived in Monsanto sales offices: "NEVER BEFORE HAVE I SEEN SUCH SERVICE AS ON THE TRUCKLOAD OF DIBUTYL PHTHALATE YOU SHIPPED...ON FRIDAY...SHIP ANOTHER TRUCKLOAD . . ."

This case, of course, was a special emergency. But it does indicate the type and degree of service that is a specialty with Monsanto. For more information on fast shipments of plasticizers, send in the coupon.

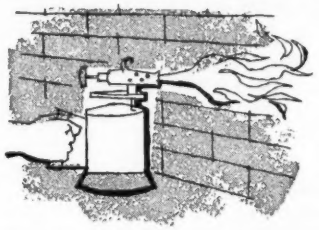
Fast-Growing Interest Shown in Liquid Fertilizers

There's a new market that's opening up more every day . . . soluble fertilizers.

Formulators find liquid fertilizers sell because they have several advantages for users. They are easy to apply, clean to handle . . . just add water. They are efficient to use . . . nutrient benefits readily available to the plant. And they are versatile . . . can be used for leaf feeding, starter solutions and many other applications.

For information on how Monsanto ammonium and potassium phosphates and phosphoric acid can help in *your* liquid-fertilizer formulation, use the coupon.

Bonding Agents Make Good Record at High Temperatures



With the increasing swing to high-temperature furnace operations in a wide variety of industries, the need for effective bonding agents has multiplied rapidly.

To meet this challenge, Monsanto has developed a variety of liquid and solid aluminum acid phosphates which are highly effective bonding agents for refractories.

Called Alkophos, this family of compounds is used in high temperature cements and refractory paints. These phosphates impart a high green strength which makes possible molded shapes, set in place without firing and fired in place to yield high temperature nonslagging refractories.

In certain quick-setting applications, they are quite effective when used with a proportion of asbestos or talc. These products are not recommended for use in the presence of most alkaline materials.

For more information on Alkophos, check the coupon.

Sterox 6 Excellent for Use In Wool Scouring Operation

A clear, straw-colored, surface-active agent of the nonionic type is now proving itself exceptionally valuable for wool scouring in the textile field.

Called Sterox* 6, this compound speeds up oil, grease and dirt removal. Actual mill tests show that it produces a cleaner, fluffier wool. Moreover, less detergent and soda ash are required, so costs are lower.

Sterox 6 gives easier rinsing, can be mixed quickly. It is compatible with phosphate, carbonate and silicate builders. Liquid form makes accurate proportioning easy, and high concentration means economy in use.

To increase the effectiveness of *your* wool-scouring operation, find out more details on Sterox 6 by sending the coupon.

*Reg. U. S. Pat. Off. Actamer: Trade-mark

MONSANTO CHEMICALS – PLASTICS

SERVING INDUSTRY...WHICH SERVES MANKIND

MONSANTO CHEMICAL COMPANY 3/3
1702 South Second Street, St. Louis 4, Missouri

Please send:

- ☐ Actamer quotations
- ☐ Sterox 6 booklet
- ☐ Milmer 1 booklet
- ☐ Santophen 1 booklet
- ☐ Dibutyl Phthalate information
- ☐ Phosphoric Acid bulletin
- ☐ Quotation on ammonium and potassium phosphates
- ☐ Quotation on Alkophos

Name ..... Title .....

Company .....

Street .....

City ..... Zone ..... State .....

When inquiring check CP 8243 on handy form, pgs. 2-3

which impart properties such as proper viscosity, boiling point, etc.

To obtain report PB 111031 remit 50c direct to Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.

Stabilizer for PVC resins contains no reactive double bonds or metals . . .

report typical vinyl formulations tested over 1500 hr without any discoloration

Uses: Stabilizer for polyvinyl chloride resins.

Features: Reportedly gives outstanding light resistance in polyvinyl chloride stocks—typical formulations have been tested for over 1500 hr in weatherometer without any discoloration.

Description: Stabilizer CH-20 is an organic compound which contains no metals, epoxy, amine, or similar groups, or reactive double bonds. It is manufacturer's idea that it functions chiefly as an anti-oxidant and represses the formation of chromophoric groups.

Although giving good light resistance, it has relatively poor heat stability. Therefore, to obtain maximum performance, CH-20 must be used in combination with a metallic stabilizer. Tests in the laboratory indicate that it also has a synergistic action on metallic stabilizers. Manufacturer recommends use of not over 1% of CH-20, based on the resin, in any compound.

Physical Properties

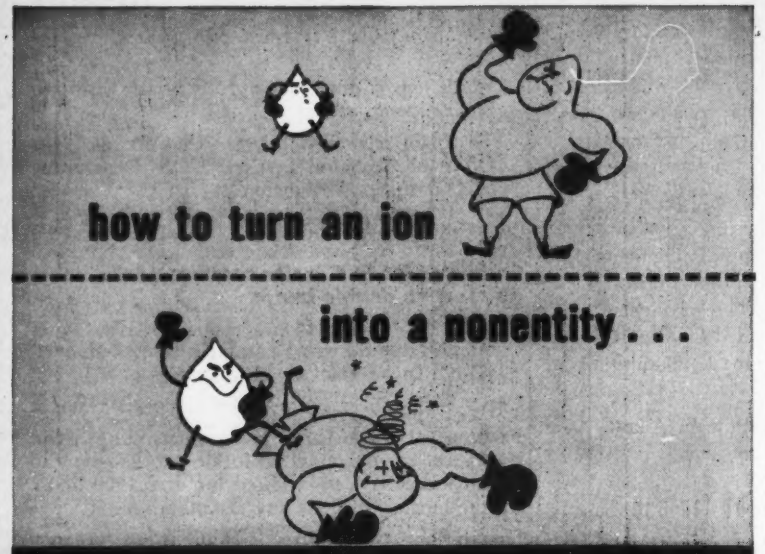
Form	liquid
Viscosity @25°C, cp	30
Color	practically water white
Specific gravity @25°C	1.085
Weight/gallon, lb	9.05
Solubility	in usual plasticizers and solvents used in vinyl industry

(A product announcement of Advance Solvents & Chemical Corp., Dept. CP, 245 Fifth Ave., New York 16, N. Y. . . . or for more information check CP 8244 on handy form, pages 2 and 3.)

Varied uses of formic acid described in bulletin

Eighteen-page bulletin summarizes uses of formic acid in pharmaceutical, metallurgical, chemical, plasticizer and other industries. As an acid, per se, industrial uses for formic acid include those requiring a volatile, inexpensive organic acid for use in processing textiles, leather and other materials, that may be damaged by treatment with mineral acids. In organic synthesis work, formic acid and derivatives can be used as starting materials for preparation of pharmaceuticals, dyestuffs, and other chemicals.

Bul FMT-2 is issued by Heyden Chemical Corp., Dept. CP, 342 Madison Ave., New York 17, N. Y. When inquiring specify CP 8245 on handy form, pages 2 and 3.



...Versene*

CHEMISTRY OF CHELATION

To turn "somebody" into "nobody" you remove him from his environment and prevent him from exerting further influence on it. Essentially, this is what you do when you use Versene* and the Chemistry of Chelation to make metallic ions lose their chemical identities. When metal ions form a complex compound with Versene, they become so strongly attached to the Versene that they lose their identity and can no longer interfere with or influence their environment in any way.

CHELATION IS THE KEY

In other words, Chelation and the Versenes* (powerful Chelating Agents) may well be the solution to your chemical problem — especially if it involves metallic ion contamination in any kind of liquid formulation.

GUARANTEED QUALITY

Made only under processes originated, developed and patented by F. C. Bersworth, the Versenes* are exceptionally stable at elevated temperatures and all pH's. Quality standards of manufacture are so high that uniform complexing power is guaranteed in both sample and carload quantities. Find out now how these most powerful Chelating Agents can help you. Write Dept. X for Technical Bulletin #2 and samples. Chemical counsel available.

*Trade Mark Registered.

VERSENE WATER TEST KIT. Tells total hardness in 2 minutes. Accurate to 1 grain per gal. Complete with instructions $5.00 postpaid.

"Chemistry's most precise chemicals"

KEY TO CHELATION

BERSWORTH CHEMICAL CO.

FRAMINGHAM, MASSACHUSETTS

WAREHOUSE STOCKS
Providence Agent: George Mann & Co., Inc., 251 Fox Point Boulevard, Providence, R.I.
W. Coast Agent: Griffin Chemical Co., San Francisco, Los Angeles
Midwest Agent: Kraft Chemical Co., Inc., 917 W. 18th Street, Chicago
Wasatch Chemical Co., Salt Lake City, Utah
Southwest Agents: Barada & Page, Inc., Dallas, Houston, Kansas City, etc.
Chas S. Tanner Co., 1815 Liberty Life Bldg., Charlotte, North Carolina

When inquiring check CP 8246 on handy form, pgs. 2-3

Sequesters polyvalent and alkaline-earth ions permanently . . .

especially effective with ferric ions — forming colorless solutions on addition of NH_4OH

Uses: Sequestrant for polyvalent metallic and alkaline-earth ions — being particularly effective with ferric ions and forming colorless solutions on addition of NH_4OH. It saponifies acids such as oleic and disperses and solubilizes hydrous oxides, rust, clays, organics, soaps, gums, etc.

It has possibilities as an aid with initiators and activators in the polymerization of synthetic rubber and resins. Product also possesses penetrating and spreading power and serves as a plasticizer and latex stabilizer.

Oxidation of fats, soaps and chemicals, corrosion of steel is minimized by small amounts of the product. Additionally it retards the putrefaction of various materials such as casein, glues, etc.

Description: Teac-90 is an organic salt derived from acids and amines. It is an amber, viscous liquid which is miscible with water and alcohols. A 20% solution has a pH range of 7.5-8.5. It is stable to moderate heat, dilute acids, alkalis, oxidizing and reducing agents.

(Manufactured by Process Chemical Specialties, Dept. CP, PO Box 345, Beverly, Mass. . . . or for more information check CP 8247 on form, pgs. 2-3.)

Process distills fatty acids and deacidifies oils

Designed to effect simultaneous distillation of fatty acids and deacidification of crude natural oils, process does not in any way depend on percentage of free fatty acid contained in the crude material. Material is processed by mild heating, high vacuum and low temperature-steam agitation.

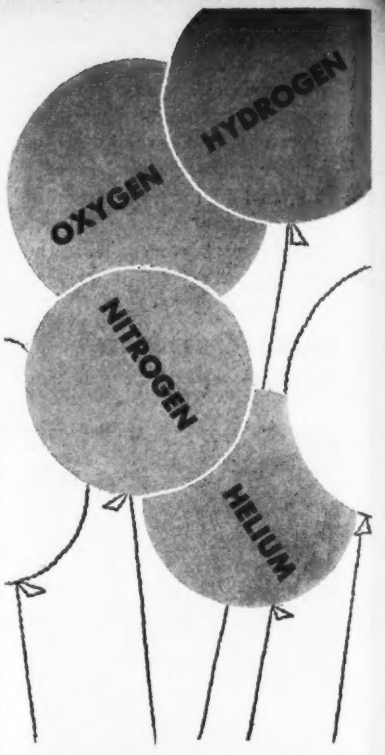
Informative bulletin outlines principle of operation, features and applications of the process. Photos and flow sheets supplement the text material. Bul 203e is issued by General Industrial Development Corp., Dept. CP, 270 Park Ave., New York 17, N. Y. When inquiring specify CP 8248 on handy form, pages 2 and 3.

Available for high-temp uses in handling numerous corrosive liquids . . .

based on nitrile synthetic rubber, material has tensile strength of 7500 psi

Uses: Forms in which product is available indicate its scope of application: pipe and fittings; molded parts; sheet, rod and tubes; and custom-fabricated tanks, large fittings, etc.

Features: It is stated to have greater rigidity, heat resistance and chemical resistance than the hard and soft nitrile rubber compounds hitherto available.



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Magnolia Airco gases and liquids . . . rare gas mixtures . . . xenon . . . krypton . . . and neon conform to specification. You can count on their purity and consistent uniformity—every shipment packaged to your requirement! Consult your nearest Magnolia Airco office for full details.

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at the frontiers of progress you'll find

AN AIR REDUCTION PRODUCT

When inquiring check CP 8249 on handy form, pgs. 2-3

Description: Based on nitrile synthetic rubber (Buna-N), Tempron is a hard rubber which at room temperature resists the following organic materials: hexane, hexene, ether, benzene, carbon tetrachloride, ethyl acetate, and benzaldehyde. It is resistant to oils but is not recommended for sodium hypochlorite or for strong oxidizing agents such as nitric acid.

Physical and Electrical Properties

	Molded parts sheet, rod & tubes	Hand-built products
Tensile, psi	7170	7500
Elongation, %	2.70	2.80
Specific gravity	1.24	1.25
Hardness-Sclero	75	80
Durometer D	87	87
Rockwell P	115	106
Rockwell R	85	87
Impact, ft-lb/in	0.41	0.49
Flexural, psi	11,300	11,800
Dielectric strength, v/mil, 60 cps	400	460
Power factor, 1 kc	0.016	0.016
Dielectric constant, 1 kc	3.50	3.70
Surface resistivity, megohms	2.0×10^5	2.0×10^4
Water absorption, 48 hr @ room temp, %	0.12	——
Heat distortion, °F	275	260

(Tempron is a group of compounds offered by American Hard Rubber Co., Dept. CP, 93 Worth St., New York, N. Y. . . . or for more information check CP 8250 on handy form, pages 2 and 3.)

Dry beneficiation of potash set for production scale

Designs are near completion on the first large potash plant to use the new LeBaron-Lawver process of ore beneficiation. It will be located in the Carlsbad (New Mexico) basin, close to the relatively new ore body there.

In the dry beneficiation process, ore is ground, dried and given a "simple and inexpensive treatment," after which it is passed between electrodes. It separates into various minerals then. Process is said to be much more economical than any other method now in use. It is applicable to potash, phosphate, and many other types of ores.

(Announced by International Minerals & Chemical Corporation, Dept. CP, 20 N. Wacker Dr., Chicago 6, Ill.)

Details use of sixteen cleaning compounds

Illustrated eight-page catalog contains data on cleaning of metal surfaces and assemblies, preparation for painting, and stripping organic finishes. Properties of sixteen of manufacturer's products are described along with their method of use.

"Metal Cleaning Chemicals" is issued by Whitfield Chemical Co., Dept. CP, 14225 Schaefer Highway, Detroit 27, Mich. When inquiring specify CP 8251 on handy form, pages 2 and 3.

New wonder metal to wearproof

SPRAY NOZZLES

STEAM VALVES

ORIFICES

OTHER SUGGESTED APPLICATIONS

- Sheer blades for molten glass
- Core pins for ceramic baking
- Fishing rod guides
- Centrifuge nozzles, separating equipment
- Bearings where corrosives are present
- Textile guides, and many other parts where corrosion with abrasion and erosion must be resisted

Carboloy Chrome Carbide protects parts, fights corrosion, abrasion, erosion

CORROSION TESTS

Grade 608 Chrome Carbide—Other Cemented Carbides—Stainless Steel

LOSS IN WEIGHT IN MILLIGRAMS PER SQUARE DECIMETER PER DAY AVERAGE OF 10—24 HOUR IMMERSION PERIODS

Test	Chemical Used	RESULTS				
		Series 600 Chrome Carbides	Other Cemented Carbides			18-8 Stainless Steel
			WC+Co	WC+TaC+TiC+Co	WC+TaC+Co	
1	10% H_2SO_4 (10% Sulphuric Acid)	55	158	302	135	1650
2	50% H_2SO_4 (50% Sulphuric Acid)	31	100	120	81	7300
3	37% HCl (37% Hydrochloric Acid)	190	600	650	160	Total Loss
4	35% HNO (35% Nitric Acid)	19	250	330	110	45
5	HNO_3—HCl (Aqua Regia)	810	2820	4500	1550	Total Loss
6	NaBCl .07 Cl_2 PH 9 (Sodium Hypochloride)	100	230	1000	158	11
7	5% NaOH (5% Sodium Hydroxide)	0.6	22	7	12	1.0
8	50% NaOH (50% Solium Hydroxide)	1.0	3	3	4	2.0
9	5% $CaCl_2$ (5% Calcium Chloride)	0.3	41	24	27	1.3
10	1.0% Citric Acid	0.6	176	150	160	2.0
11	5.0% Lactic Acid	1.5	200	170	255	5.1

Acids, alkalis, heat, oxidation, erosion, abrasion cutting down the life of your equipment parts?

Then here's a brand new Carboloy created-metal worth checking into. It's Grade 608 Chrome Carbide—not a cutting metal, but the first member of an entirely new family of metallic carbides especially for wearproofing . . . outstandingly effective in resisting corrosion and erosion combined with abrasion.

In addition, chrome carbide is lightweight, non-magnetic, stable, strong, machineable . . . has a coefficient of thermal expansion similar to that of steel. Chemical test results, left, for example, show how well chrome carbide stands up under acids.

For full details on physical properties, characteristics, application histories, etc. of this new created-metal, send coupon, below, for free Chrome Carbide data sheets.

"Carboloy" is the registered trademark for the products of Carboloy Department of General Electric Company

CARBOLOY
DEPARTMENT OF GENERAL ELECTRIC COMPANY
11159 E. 8 Mile Road, Detroit 32, Michigan

PLANTS AT DETROIT, MICHIGAN; EDMORE, MICHIGAN; AND SCHENECTADY, NEW YORK

MAIL COUPON TODAY FOR

FREE CHROME CARBIDE DATA SHEETS

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Please rush me free Technical Bulletin WR-184 containing Chrome Carbide Data Sheets.

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

When inquiring check CP 8252 on handy form, pgs. 2-3

You use the world's best paint on jobs like this

Of the $65,000 spent to paint this great bridge, less than a third was the cost of the paint itself. That's why it is economical to use the best quality aluminum paint that adds extra years between repaintings.

So much aluminum paint is used for metal and masonry surfaces that special formulas have been developed. Paints made to these formulas last longer, protect better under heat, cold, sun, rain, smoke and fumes.

If you have plants, structures or equipment that need paint, it will pay you to find out more about the kinds of aluminum paints now available. We do not make paint. But, as the leading suppliers of aluminum pigments to paint manufacturers, we want you to get the best results from the aluminum paint you buy.

Write us about your paint problems and we'll tell you what type of aluminum paint to use. We'll also send you a copy of *Painting with Aluminum*. It is packed with facts and answers to all types of industrial painting questions. Write Paint Service Bureau, Aluminum Company of America, 1790-C Alcoa Bldg., Pittsburgh 19, Pa.

Alcoa Aluminum

ALUMINUM COMPANY OF AMERICA

When inquiring check CP 8253 on handy form, pgs. 2-3

Prevents discoloration of white baking enamels

Uses: For use as a drier catalyst in baked finishes based on pure epoxy resins, or combinations of epoxy, urea formaldehyde, melamine, or alkyd resins.

Features: Especially advantageous in white baked films where discoloration must be prevented. Other advantages include increased cross-linking in molecular structure, resulting in tough films, good color retention in baked films, and good water and soap resistance of films.

Description: Hexogen Rare Earth Octoate 6% is a metallic soap solution in mineral spirits of rare earth metals (mainly lanthanum and cerium in equal proportions) and 2-ethyl hexoic acid. Physical properties are set forth below:

Specific gravity @ 60°F	0.88
Lb/gal	7.35
Viscosity (G-H)	A
Color (Gardner)	4
Metal content, %	6.0 ± 0.1
Non-volatile, %	28.6

Excellent color retention has been obtained in white baking enamels as compared with use of cobalt driers — even when baked 30 min at 350°F, or 15 min at 380°F. Recommended dosage is 0.02-0.04% rare earth drier based on epoxy resin solids. Excessive amounts of rare earth will cause embrittlement of epoxy resin films.

Hexogen Rare Earth Octoate 6% is a good drying metal when used alone at elevated temperatures, or used in combination with cobalt, manganese, and lead driers.

(Product of Advance Solvents & Chemical Corporation, Dept. CP, 245 Fifth Ave., New York 16, N. Y. . . . or for more information check CP 8254 on handy Reader Service slip between pages 2 and 3.)

Films of sodium on inert solids permit dry-way reactions

Colloidal films of sodium spread over inert solids of high surface area yield sodium at its maximum energy level, in an easily handled, easily controlled form. In addition to offering easy control of reaction rates and temperatures above and below the melting point of sodium, material permits dry-way reactions and promotes safety by eliminating flammable solvents.

According to manufacturer of metallic sodium, these films of sodium can be used for reduction of metal salts and oxides to finely divided metals; purification of gases, hydrocarbons and ethers to remove oxygen, nitrogen, halogen and sulfur compounds, moisture and trace amounts of certain other impurities; and as a catalyst for hydrocarbon cracking, polymerizations and rearrangement reactions.

Bulletin describing applications and available information for the material is issued under

the title "High Surface Sodium" by the U. S. Industrial Chemicals Co., Dept. CP, 120 Broadway, New York 5, N. Y. When inquiring specify CP 8255 on handy form, pages 2 and 3.

High rosin fractions of tall oil available to industry in liquid form . . .

esters made from product are claimed to be fast drying, fast bodying and light in color

Uses: It offers an economical replacement for rosin-fatty acid mixtures used in the production of varnish and should have application for soluble cutting oils, soaps and emulsifiers. In latter applications it is expected to replace rosin and oleic acid mixtures.

Features: Esters made from tall oil are reported to be fast drying, fast bodying, light in color, and bland in odor with good color retention and elasticity. Since product requires no melting or blending and saponifies readily at lower temperatures, it promises to reduce material and labor costs.

Description: Flextal is a non-crystallizing tall oil which can be made with up to 60% rosin acid content in liquid form. At present it is being produced in acid contents of 37, 45 and 60%.

Following are reported specifications:

	"37"	"45"	"60"
Fatty acid,%	63	55	40
Saponification No.	185	185	185
Iodine value	135	135	135
Unsaponifiables	2.5	2.5	2.5
Color	10-12	10-12	10-12
Acid No.	170	170	170
Viscosity	K-M	T-V	Z3-Z4
Specific gravity	0.970	0.987	1.007
Weight/gallon, lb	8.08	8.20	8.4

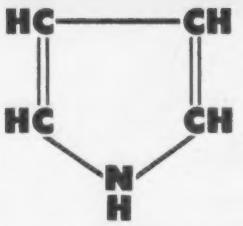
(Offered by Farac Oil & Chemical Co., Dept. CP, 145th St. & Indiana Ave., Chicago 27, Ill. . . . or for more information check CP 8256 on handy form, pages 2 and 3.)

Resin adheres to surfaces with little or no bake

Improved adhesion to many surfaces is offered by vinyl chloride-acetate copolymer containing about 1 per cent of interpolymerized maleic acid. It is the carboxyl groups of this acid that account for the properties of the resin. Presence of these groups results in development of specific adhesion to clean metal surfaces, and provides points of reactivity on the resin molecular chains for cross-linking reactions.

Properties, specifications, applications, and formulation information for resin are given in 16-page bulletin. Technical Release No. 12 is issued by Bakelite Co., Div. of Union Carbide and Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N. Y. When inquiring specify CP 8257 on handy form, pages 2 and 3.

Now Available



IN DEVELOPMENT QUANTITIES!

PYRROLE

A CYCLIC SECONDARY UNSATURATED AMINE

PYRROLE is an extremely reactive compound, offering interesting possibilities as a chemical intermediate. A variety of unusual compounds can be obtained by substitution, condensation, and ring expansion reactions. Pyrrole has acidic rather than basic properties, the imino hydrogen being replaceable by potassium. It also exhibits marked aromatic characteristics and resembles phenol in many of its simpler reactions. Several typical reactions of pyrrole are listed below.

PROPERTIES

Appearance	Colorless liquid, darkens on standing
Odor	Mild, non-irritating
Molecular Weight	67.09
Boiling Point	130-131°C.
Melting Point	–24°C.
Specific Gravity, 20/4	0.968
Index of Refraction, N20/D	1.5091
Flash Point (Tag closed cup)	38.9°C.
Solubility	
Water	8.0 gms./100 gms. water at 25°C.
Organic Solvents	Soluble in most organic solvents.

REACTIONS

- With alkyl and acyl halides, acid anhydrides, halogens, Grignard reagents, and diazonium compounds, pyrrole gives N- and C- substituted pyrrole derivatives.
- With paraformaldehyde, it yields methylol pyrroles of possible use as cross-linking agents.
- With chloroform, it gives pyrrole alpha-aldehyde.
- With carbon dioxide, it forms pyrrole carboxylic acids.
- Polymerization of pyrrole yields tripyrrole which on heating gives indole.
- With aldehydes and ketones, it yields 16-membered cyclic compounds of possible use as chemical intermediates.
- Ring expansion of pyrrole produces pyridine derivatives.

A REQUEST on your company letterhead will bring technical bulletins and price information. Just write to E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Field Research Section, Wilmington 98, Delaware.

DU PONT
ELECTROCHEMICALS
DUPONT

When inquiring check CP 8258 on handy form, pgs. 2-3

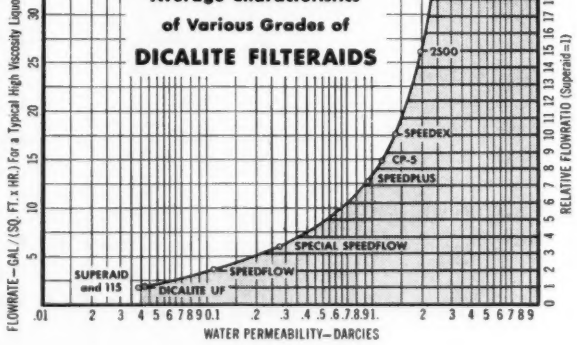
DICALITE'S DIATOM DEPOSITS...

Thousands of Acres of INSURANCE

—To Guarantee Constant Quality and Ample Supply in *Every* Grade

In that one fact — many deposits, with slight natural differences between them — lies the reason why you are assured of both uninterrupted supply and top quality when you use any DICALITE material.

Take, for example, one major group of DICALITE products . . . the Filteraids. Look at the chart below; notice the wide range of clarity and filtration "speed" available to you for maximum operating flexibility and economy. That's the great advantage given us by a number of different deposits — a *head start* to controlled quality through choice of the best crude "ore" for each product. And naturally, DICALITE'S multiple sources of raw material is your assurance of uninterrupted supply.



WHATEVER YOUR NEEDS—YOU'LL DO BETTER WITH *Dependable* GREAT LAKES **Dicalite** DIATOMACEOUS MATERIALS

DICALITE DIVISION, GREAT LAKES CARBON CORPORATION • NEW YORK 17 • CHICAGO 1 • LOS ANGELES 17

When inquiring check CP 8259 on handy form, pgs. 2-3

Develop resin for use in water and organic systems

Uses: Finds application in organic and water systems as a film-forming vehicle, thickener, binder, emulsifier, protective colloid, dispersing agent, anti-blocking agent, and modifier for natural, water soluble materials.

Suggested fields of use include latex paints and coatings, printing inks, pigment dispersions, ceramic glazes, high gloss and grease resistant coatings, textile sizes, wax emulsions, adhesives, and non-blocking topcoats. Extended usage includes heat sealing compounds, parting agent coatings, wet strength paper, leather tannages, insecticide and fertilizer binders, paper and textile stiffening, lithography, photography, foundry core washes, abrasives, and wire insulation coatings.

Description: Lustrex X-820 is a carboxyl-containing polyelectrolyte supplied as a finely ground hard resin, readily soluble in dilute alkalis, common alcohols, ketones, and esters. Insolubility is shown in water. It reacts with amines and forms insoluble salts with various cations.

(Still in the developmental stages, Lustrex X-820 is a product of the Plastic Division, Monsanto Chemical Company, Dept. CP, Springfield 2, Mass. . . . or for more information check CP 8260 on handy form, pages 2 and 3.)

Tabulates typical analyses for 14 fatty alcohols

Typical analyses — including values for cloud, titer, or melting point; iodine, acetyl and hydroxyl values; average molecular weight; distillation range; and color — are listed for 14 fatty alcohols in convenient table. Four categories — oleyl, cetyl-oleyl blends, cetyl, and stearyl alcohols — are included in listing, totalling 14 compounds (or blends).

Bul C-16 is issued by M. Michel and Co., Inc., Dept. CP, 90 Broad St., New York 4, N. Y. When inquiring specify CP 8261 on handy form, pages 2 and 3.

Add four chemicals to available line

Four new chemicals have been added to this manufacturer's line. First, *ceryl alcohol,* is a crystalline solid with an 80°C melting point. It is insoluble in water, though soluble in alcohol. Cerotic acid is formed on treatment with soda lime. The alcohol proper is a convenient starting point in the synthesis of higher aliphatic compounds, while its esters find use in the wax and allied fields.

Chelidonic acid (Jervastic acid) is a crystalline solid decomposing at 257°C, sparingly soluble in most cold solvents, and soluble in 25 parts boiling water. Yields gamma-pyrone on dry distillation, and forms pimelic acid on treatment with excess HI and cheli-

damic on treatment with NH_3. Does not react with hydroxylamine. Said to form large number of sparingly soluble salts. Useful for pharmaceutical purposes and in biochemical research.

2,4-Dichloropyrimidine forms needles from petroleum ether. Melting point is 63°C and boiling point 198°C (atm pressure). It is a highly volatile solid giving off vapors which are highly irritating to the eyes. Soluble in alcohol, benzene, and ether. Forms 4-pyrimidol on treatment with red phosphorus and dithiouracil with potassium hydrosulfide. Useful in the preparation of higher pyrimidine derivatives.

Quinic acid (hexahydro-1,3,4,5-tetrahydroxybenzoic acid) forms white monoclinic crystals from water.

Melting point is 162-3°C. Soluble in water, alcohol, and glacial acetic acid. Undergoes a wide variety of reactions including the formation of quinone on oxidation, protocatechuic acid on fusion with KOH, quinide on being heated to 200-250°C. Large number of metallic salts can be prepared. The free acid, as well as its derivatives, are used in the preparation of pharmaceuticals. Has been used as a fluorescent indicator, as a cell stimulant, and as a starting material in the preparation of shikimic acid.

(Products of Bios Laboratories Inc., Dept. CP, 17 West 60th Street, New York 23, N. Y. . . . or for more information check CP 8262 on handy form, pages 2 and 3.)

Make citrazinic acid available

Trial lot quantities of citrazinic acid — a polyfunctional pyridine compound — are currently being offered to the pharmaceutical, dyestuff, agricultural chemical, plastics, metal treatment, and other industries.

Designated as CZA, the material is white-to-buff colored. It is said to make possible many chemical reactions, as well as the synthesis of new classes of substituted pyridines. Chemical name is 2,6 dihydroxyisonicotinic acid.

(Product of the Chas. Pfizer Company, Inc., Dept. CP, 630 Flushing Ave., Brooklyn, N. Y. . . . or or for more information check CP 8263 on handy form, pages 2 and 3.)

Bulletin describes procedure for bleaching oils and fats

According to informative bulletin, color of fats and oils can be improved by a treatment with hydrogen peroxide. Method has been used to treat such products as low grade tallow, peanut oil and soybean oil.

Equipment, hydrogen peroxide requirement and procedure for treating materials are outlined in 2-page bulletin. Bul P-27-1052 is issued by Electrochemicals Dept., E. I. du Pont de Nemours & Co., Inc., Dept. CP, Wilmington 98, Del. When in-inquiring specify CP 8264 on handy form, pages 2 and 3.

Licorice mass flows from finisher into a container for hardening

LICORICE *may hold new profits for you*

In your search for new products, or in your efforts to improve your present products, *don't overlook licorice.* The full potentialities of nature's sweetest compound have not been realized. Perhaps they never will be. But modern research has found so many new uses for licorice, and so many other uses are in such promising experimental stages, that anything seems possible.

There was a time, for example, when the tobacco industry used no licorice. Today, over 20 million pounds a year are consumed to give mildness to most popular pipe and chewing tobaccos, cigars and cigarettes. And who would have suspected the fire-fighting qualities of licorice? Research revealed them. The spent root yields a foaming agent of such staying power that it became the basic compound of Foamite Firefoam.

Read the accompanying list of new and potential uses for licorice. If anything in this list has even a remote association with your products or problems, it may pay us both to get together. We don't have all the answers, but we do have the licorice and the licorice by-products and the know-how to help you find them.

Some New or Potential Uses for Licorice

Flavoring for ice cream • Antioxidant to keep chewing gum fresh • Prolonging foam in porter and ale • Soft drink flavoring • Aging and mellowing smoking pipes • Pickling sheet metals • Improving meat and fish sauces • Mild regulator in feed for horses, cattle and chickens • Remedy for roup • Stabilizing acid latex • Flotation agent in ore separation by gravity

Write today for your free copies of "The Story of Licorice" *and* "Licorice: Dark Mystery of Industry." *They'll be mailed promptly. You're sure to find them interesting, and you might find them profitable as well.*

MACANDREWS & FORBES COMPANY
Licorice and Licorice Products • Since 1870
200 Fifth Avenue, New York 10, N.Y. ***Plant:*** **Camden, New Jersey**

When inquiring check CP 8265 on handy form, pgs. 2-3

Richness of color combined with chemical inertness in gold pigment . . .

material is not only lightfast but also provides a yellow filtering effect

Richness of color and transparency usually associated with a dye is combined with the chemical inertness of the ideal pigment in a hydrous ferric oxide derivative, according to manufacturer. Material is available in dispersed form for use in lacquers and synthetic coatings.

Product is not only lightfast itself, but seems to provide a yellow filtering effect in lacquers and other fast-drying films. This gives added protection from the deteriorating effects of ultraviolet light to other pigments used with it and makes the film itself more durable.

Large part of the production of pigment has been used in transparent metallic finishes, where it is used with one or more tinting colors and aluminum flake. Color tones range from golden tans through browns, maroons, blues, greens, and grays, depending on tinting colors used. When used alone, material provides a pale gold to a deep amber color, depending on thickness of coating or amount of pigment used. It is also being used in nitrocellulose and synthetic wood stains where it is said to "look like a dye but act like a pigment."

(Midas Gold pigment is product of R-B-H Dispersions, Div. of Interchemical Corp., Dept. CP, Bound Brook, N. J. . . . or for more information check CP 8266 on convenient form, between pages two and three.)

Technical information on ethanolamines

Four-page bulletin discusses physical, chemical, and physiological properties as well as various uses of the ethanolamines — mono-, di-, and triethanolamine. Physical properties of the three compounds are summarized in handy table. Various applications of materials include their use in purification of gases, in the manufacture of emulsions and detergents, and in the cosmetic and pharmaceutical industries.

Bul F-7968 is issued by Carbide and Carbon Chemicals Company, Division of Union Carbide and Carbon Corporation, Department CP, 30 East Forty-Second Street, New York 17, New York. When inquiring specify CP 8267 on handy Reader Service slip between pages 2 and 3.

Hydrocarbon resin series composed of 5 members

A series of hydrocarbon resins is now being produced in both "reactive "and "non-reactive" types in colors ranging from light lemon to black to meet the specific requirements of formulators in varied applications. Currently available are Panarez 3, 6, 7,

ECONOMICAL EMULSIONS FOR MANY FIELDS POSSIBLE WITH ARMOUR'S EMULSIFIERS

By Dr. M. R. McCorkle, Technical Director, Armour Chemical Division

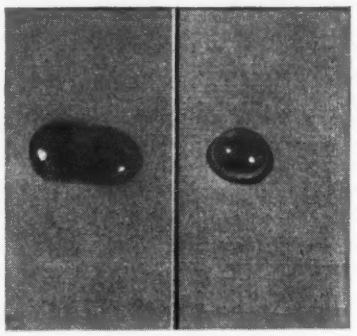
Emulsions covering a vast number of uses are now possible and profitable through the use of Armour chemicals as emulsifiers. Today, emulsions are used as an improved method for applying many chemicals, and frequently afford a safer, more economical means of handling them than is possible using any other method.

In providing for the dispersion of grease, fat, wax, resin or other oil-soluble, water-insoluble products, the uniformity and dispersion of the material depends largely on the effectiveness of the emulsifier, rather than upon the mechanical agitation of the emulsion. Thus stable emulsions of fine particle size are possible with minimum agitation with the proper emulsifier.

Armour has recently provided an extensive range of excellent emulsifiers, making available to the emulsion technologist a wide choice of compounds and presenting possibilities almost without limit. It is important to remember that combinations of emulsifiers are often more efficient than any single emulsifier. We will be glad to discuss your emulsion problems and suggest formulations, either of single emulsifiers or combinations, to solve specific problems involving dispersion, plating out or handling of chemicals.

Emulsions have proved particularly useful as an economical and efficient method for dispersing insecticides, parasiticides and fungicides. In this application an oil-soluble but water-insoluble chemical, like DDT, chlordane or 2,4-D is dissolved in a suitable solvent, like kerosene. An emulsifier is added to the solution. The resulting emulsifiable concentrate can be mixed with water in the field to form the spray liquid, a long-lasting emulsion which requires only minimum agitation.

Armour has developed cationic and nonionic emulsifiers that are not affected by water hardness. Cationic emulsifiers tend to exhaust their oil phases on, and bind them to, many types of surfaces such as wood, animal hair, cellulose and concrete. This property enhances the effectiveness of insecticides by promoting adhesion and improving weather resistance. Arquad 2C is a strongly cationic surface active agent that is an excellent emulsifier of this type. Ethomeens S/12 and S/15 can be combined in extremely low concentrations to form a very effective, mildly cationic emulsifier for 2,4-D isopropyl ester. Ethofat 142/20, another cationic emulsifier, is so efficient that chlordane can be emulsified directly into water without the use of a solvent. The fact that these emulsifiers are not affected by water hardness greatly increases the range of their use since untreated water, in hard water areas, can be used safely and efficiently.



Spreading of the water drop on the left indicates surface wetting on conventionally emulsified Carnauba coating. Water drop on right—with no wetting—is on coating of Carnauba emulsified by new Armour chemical.

A combination of Armac T and Ethomeen S/25 has made possible improved water resistance and non-spotting characteristics of Carnauba wax emulsions for floor waxes, etc. The photograph shows the water resistance of this new Carnauba emulsifier (right) as compared to a conventional emulsifier (left). Both coatings were allowed to dry 15 minutes. Four drops of water were applied to each and photographed 1½ minutes later. The Armac-Ethomeen formulation gives permanent water repellency immediately upon drying.

Aromatic or chlorinated solvents can be emulsified in water to form degreasers or cleaners. Fabrics, glass or plastics can be coated with solvents, oil, wax or other compounds to provide such characteristics as water repellency, or even to give corrosion resistance. In cosmetic formulations such as hair oils, hand creams or shaving creams, the desired bland, creamy effect can be enhanced by the choice of an efficient emulsifier which insures a long-lasting suspension of fine particle size.

Recent work has produced simple answers to what have previously been considered difficult or unsolvable problems. A 40% fluid emulsion of paraffin with fine particle size is now possible. This emulsion will remain fluid when cooled below the melting point of the paraffin. Another development uses Ethomeens to emulsify mineral oil in the presence of strong mineral acids, such as sulfuric or hydrochloric. And a clear emulsion of latus petroleum oil is possible using Ethofat 142/20.

For complete information on these Armour emulsifiers, send the coupon for your free copy of Technical Bulletin F-2.

INERT KETONES WITH WIDE COMPATIBILITIES USEFUL IN COATINGS AND FINISHES

Three higher molecular weight aliphatic ketones—Stearone, Laurone and Palmitone—provide characteristics useful in coatings, finishes and waxes. They are particularly inert compounds, even more so than most fatty ketones. Unaffected by high temperatures, acids, alkalis and other strong reagents, these ketones are subject to only a few reactions under rigorous conditions.

Stearone, Laurone and Palmitone have a wide range of compatibility with many waxes, such as high-melting vegetable waxes, microcrystalline waxes and paraffin waxes. They are also compatible with triglycerides and fatty acids such as stearic. In 20-30% concentration, they form a solid paste with many solvents at room temperature. They are insoluble in water and only slightly soluble in inorganic solvents at room temperature.

The inert chemical nature of these fatty ketones and their resistance to degradation by high temperatures suggest a number of applications where these high-melting, wax-like materials may prove advantageous. Such applications include their use in wax and polish formulations, as mold release agents, resin lubricants and anti-blocking agents, as flattening agents for paints and varnishes, as ingredients in waterproofing compounds, components in electrical insulations, protective coatings, cosmetic formulations, as lubricants for vinyl calandering and extrusion, and as anti-blocking agents for coatings and films.

Samples of these three ketones are available, with which you can carry on your own testing for applications of value to you. Stearone is commercially available in 50-lb. multiwall bags, while Palmitone and Laurone are available in quantities ranging from one to one hundred pounds.

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ARMOUR CHEMICAL DIVISION

ARMOUR AND COMPANY · 1355 WEST 31ST STREET · CHICAGO 9, ILLINOIS

PRODUCT DEVELOPMENT AND IMPROVEMENT WITH COMMERCIALLY PURE MYRISTIC ACID

Neo-Fat®14—Armour's commercially pure myristic acid—averages 94% myristic, 3% lauric and 3% palmitic acid content. This purity, of a degree never before commercially available, is due to Armour's patented fractional distillation process. It provides you with an outstanding material for the improvement of present products and the development of new compounds.

SPECIFICATIONS	MIN.	MAX.
Iodine No.	—	1.0
Acid Value	243	249
Titer, °C.	48	52
Unsaponifiable	—	0.2%
Moisture	—	0.2%
Color, Lov. 5¼"	—	1R-10Y
Odor	Characteristic	
Appearance	Characteristic	

SOLUBILITY AND COMPATIBILITY

At 60°C., Neo-Fat 14 is soluble in acetone, amyl acetate, benzol, butanol, carbon tetrachloride, dipentene, ethanol 90% and 100%, kerosene, methyl cellosolve, turpentine, V.M.&P. naphtha and xylol.

It is compatible at 60°C. with alkyd resins, asphalt, beeswax, carnauba wax, linseed oil, paraffin wax, petroleum pale oil and soybean oil.

USES

Many references have been made in recent literature to the use of various Neo-Fat 14 derivatives in detergents, dyes, textiles,

wetting agents, lubrication oils and greases, and other industrial applications. Alcohols, nitriles, amine esters and metallic soaps may be produced easily and find innumerable applications. Some specific uses follow.

Glyceryl monomyristate may be used as a substitute for coco butter in suppositories and similar products. It is not as soft or oily as coco butter, but it is more water absorbent. It has superior soothing qualities and is more readily miscible with other chemicals of a water soluble nature.

Neo-Fat 14 or its metallic soaps have been used in rubber compounding, synthetic resins, paints, and in grease compounding.

The sodium or potassium soaps of Neo-Fat 14 have remarkable sudsing and wetting action without the skin-irritating characteristics found in most free lathering soaps. For this reason it should be most suitable for use in cosmetics, shampoos, shaving creams, and other applications where skin irritation is undesirable. Neo-Fat 14 is also used in the preparation of agricultural parasiticides.

Neo-Fat 14 is available for immediate shipment in flake form both in 50-pound multi-wall bags and in aluminum tank cars. Send the coupon today on your letterhead for free samples and current price quotations.

PURE CAPRYLIC AND CAPRIC ACIDS CAN BE BUILDING BLOCKS FOR MANY NEW PRODUCTS

The availability of Armour's high purity caprylic (Neo-Fat 8) and capric (Neo-Fat 10) acids should interest many processors working on new product development, particularly that involving organic synthesis.

These two coco fractions are available with purity of 92% or above. The average composition of Neo-Fat 8 is 93% caprylic, 4% capric, and 3% caproic. Neo-Fat 10 averages 92% capric, 5% lauric and 3% caprylic acids.

SPECIFICATIONS

Neo-Fat 8: titer, 16°C. max.; iodine value 1 max.; acid value of 387 to 392; moisture and unsaponifiable content both 0.2%; and color, Lovibond 5¼", 2R to 20Y max.

Neo-Fat 10: titer, 28 to 33; iodine value 1 max.; acid value of 323 to 329; moistrue and unsaponifiable content both 0.2%; and color, Lovibond 5¼", 2R to 20Y max.

SOLUBILITY AND COMPATIBILITY

Both Neo-Fat 8 and 10 are soluble in the following (Neo-Fat 8 in all proportions): acetone, amyl acetate, benzol, butanol, carbon tetrachloride, dipentene, ethanol 95% and 100%, ethyl ether, ethylene glycol, kerosene, methyl cellosolve, turpentine, V.M.&P. naphtha, and xylol.

Both are compatible (at 60°C.) with the following: asphalt, beeswax, carnauba wax, ester gum, gum resin, linseed oil, paraffin wax, petroleum pale oil and soybean oil.

NEO-FAT 8 USES

Due to its exceptionally high purity, Neo-Fat 8 is an excellent raw material for producing derivatives of caprylic acid, such as alcohols, aldehydes, ketones, esters, metallic salts, nitriles, amides, amines, and other such products. The pure acid or its derivatives find use in the manufacture of essences, synthetic perfumes, flavors, artificial leather, among other applications. It is also used in anti-foaming agents, dyestuffs, pharmaceuticals, and as a manufacturing intermediate in many synthetic organic compounds.

Sodium caprylate is used extensively as a germicide and antiseptic in athlete's foot ointments and lotions. And as a parasiticide, the addition of 1-5,000 caprylic acid in economic poisons kills 90% of the black chrysanthemum aphid.

Esters of caprylic acids with diethylene, triethylene and propylene glycols are suitable plasticizers for ethyl and nitro-cellulose, polyvinyl acetal, etc. Triethylene glycol dicaprylate is used with other plasticizers in vinyl-vinylidine copolymers to act as an extrusion aid. Neo-Fat 8 may also be used as a high boiling solvent for plastics, varnishes, gums, etc.

NEO-FAT 10 USES

Neo-Fat 10 is an excellent raw material for producing alcohols, aldehydes, ketones, esters, metallic salts, nitriles, amides, amines and other derivatives of capric acid which find many varied uses in the chemical industry and in many other fields.

In an insecticide formulation, the addition of 1-1200 Neo-Fat 10 killed more than 99% of the green apple aphid. In another field, 0.1-1% capric to myristic in polysiloxane lubricants gives low-boundary friction co-efficients. In other applications, capric acid finds use in the manufacture of essences, synthetic perfumes, flavors, disinfectants, anti-foaming agents, dyestuffs, pharmaceuticals, high boiling solvents for paints, varnishes, plastics, gums, etc., and as a manufacturing intermediate in many synthetic organic compounds.

Samples of these two versatile chemicals can show you how readily they can be put to work for you. Write today on your letterhead for these samples.

Send samples: ☐ Stearone ☐ Laurone ☐ Palmitone ☐ Neo-Fat 8 ☐ Neo-Fat 10 ☐ Neo-Fat 14

Send literature: ☐ Tech. Bulletin F-2, "Armour Emulsifiers"

Name ..... Title .....

Firm .....

Address .....

City ..... Zone ..... State .....

1

When inquiring check CP 8268 on handy form, pgs. 2-3

8, and 12, all with a softening point in the range of 200-220°F. Limits of 20°F in the softening point of any particular resin grade are maintained.

Typical properties of standard resin grades are shown in the table. Other grades having either lower or higher softening points can be produced for special applications.

Panarez Hydrocarbon Resins

	3-210	6-210	7-210	8-210	12-210
	← Reactive →				Non-reactive
Specific gravity 60/60°F	1.049	1.106	1.091	1.059	1.054
Lb/gal	8.746	9.220	9.088	8.822	8.780
Color, Gardner-1933	9	12	—	—	16
Barrett	—	—	7	15	—
Non-volatile No., wt %	←		100		→
Softening point (ASTM), °F	←		210		→
Melting point, °F (approx)	←		233		→
Viscosity, G-H					
70% toluene	R	M	W	S	G
70% mineral spirits	W	Z3	X-Y	Z5-Z6	U-V
Iodine number (Wijs)	220	165	160	150	50
Saponification number	←		nil		→
Acid number	←		nil		→
Ash	←		trace		→

These resins may be employed in such applications as: *metallic paints, oleo-resinous paints and varnishes, water-emulsion interior paints, phenolic and alkyd finishes, sanitary can coatings, traffic paints, wood oil stains, concrete curing compounds, rubber compounding, shoe soles, mastic floor tile, textile treating compounds, and printing inks.*

(Products of the Pan American Chemicals Div. of the Pan American Refining Corporation, Department CP, 122 East Forty-Second Street, New York 17, New York . . . or reader may secure more information by checking CP 8269 on handy Reader Service slip between pages 2 and 3.)

Ion exchange demineralizes and removes silica

Twenty-eight page bulletin has been prepared to help explain one of the newer roles that ion exchangers are playing. Demineralization and silica removal by means of ion exchange resins are being used in the following fields: power plants, biologicals, chemicals, drugs, pharmaceuticals, foods, beverages, solvents, electroplating, process liquors, textiles, glass, plastic products, non-ferrous metals, waste treatment, etc.

Bul 3803 describes chief applications, principles of operation, design features, advantages, recommendations, and specifications of maker's demineralizing and silica removal apparatus and synthetic resins. Issued by the Permutit Company, Department CP, 330 West Forty-Second Street, New York 36, New York. When inquiring about this development simply specify CP 8270 on handy form, pages 2 and 3.

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coconut oil fatty acids
for PURITY

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You'll agree — El Dorado's standards are the highest in the industry.

One *BIG* REASON is that El Dorado has specialized in Coconut Oil Products for a half century.

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PRODUCTS	GUARANTEED PURITY
Caprylic	93% or better
Capric	92% " "
Lauric	94% " "
Myristic	92½% " "
Palmitic	70-75% " "

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When inquiring check CP 8271 on handy form, pgs. 2-3

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Immediate Shipment In

• tank cars.

• tank wagons in leading industrial areas.

• drums in carload lots.

• drums in truckload lots.

50 warehouses and 11 bulk stations ready to serve you.

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30 East 42nd Street UCC New York 17, N. Y.

In Canada:
Carbide and Carbon Chemicals, Limited, Toronto

When inquiring check CP 8272 on handy form, pgs. 2-3

Good curing and aging prop's reported for rubber activator

Uses: An activator for natural rubber compounds using thiazole and thiuram accelerators.

Features: Imparts unusually good and level curing characteristics, and superior aging properties, maker reports.

Description: Actogen in sufficient quantities in some compounds will also replace part or all of the stearic acid. This is an advantage for maintaining tack during fabrication of products especially for several types of repair jobs. Activator, in addition, is said to reduce heat build-up, impart good hot properties, and reduce curing time.

Actogen Activator

Chemical name	dibutyl ammonium oleate
Appearance	dark amber liquid
Odor	slight
Specific gravity	0.87
Moisture	less than 0.5%
Toxicity	none
Storage stability	excellent

Actogen is used at 0.25-1.0 parts with thiazole or thiuram accelerators. The amount of fatty acid generally used can be decreased. Where 0.75 part Actogen is used, the fatty acid may be eliminated. Normal amounts of zinc oxide and sulfur are required. Activator is safe at processing temperatures but very active at curing temperatures.

(Product of the Harwick Standard Chemical Co., Dept. CP, 60 S. Seiberling St., Akron 5, Ohio . . . or for more information check CP 8273 on handy form, pages 2 and 3.)

Make additions to line of driers

Recent additions to this manufacturer's line of drier products should have interest in the coating formulation field. First are Lo-Odor driers designed for odorless finishes. They are reported to offer good stability and uniformity, and may be used alternately on an equal basis with driers of similar strength. Typical chemical and physical properties are tabulated below:

	Lo-Odor Driers		
	Cobalt 6%	Lead 24%	Manganese 6%
% Metal	6.0	24.0	6.0
Total solids @ 105°C, %	69	73	72.5
Color (Gardner)	blue red	14	16
Specific gravity @ 20°C	0.961	1.158	0.963
Flash point (TCC), °F	120	120	132
Viscosity @ 25°C	H	S	G

Second is Uversol Rare Earth Liquid 4% which is a useful drier with straight epoxy resins or resin blends of the high bake type. Advantages include faster curing rate, less discoloration, increased film hardness, and improved toughness. There are indications

FOAM'S A THIEF...

KILL IT
with Dow Corning
ANTIFOAM A

The most versatile and efficient of defoamers, Dow Corning Antifoam A is effective at concentrations in the range of:

1 ppm in distilling vegetable oils
0.1 ppm in crystallizing sodium bromide
3 ppm in textile sizing solutions
3 ppm in cooking syrups
10 ppm in Geon latex
4.5 ppm in yeast fermentation

Dow Corning Antifoam A is odorless, tasteless and physiologically harmless. And it is most economical to use because it is effective in such amazingly low concentrations. Dow Corning Antifoam A can be used as received, dispersed in a solvent or mixed with one of the foaming ingredients.

Dow Corning Antifoam A Emulsion is widely used in the industrial processing of aqueous foamers. Dow Corning Antifoam AF Emulsion is equally effective in aqueous systems and designed for use in the food processing industries.

see for yourself!

mail coupon TODAY for free sample

DOW CORNING SILICONES

Dow Corning Corporation
Midland, Mich., Dept. BB-3.

Please send me data and a free sample of—

☐ Dow Corning Antifoam A or
☐ Dow Corning Antifoam A Emulsion or
☐ Dow Corning Antifoam AF Emulsion

NAME _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE ____ STATE _____

When inquiring check CP 8274 on handy form, pgs. 2-3

that this drier may partially replace active driers such as cobalt, with resulting shortened curing cycles. Typical chemical and physical properties are also outlined as follows:

Uversol Rare Earth Liquid 4%	
% Rare earth (as Ce), %	4.05
Total solids @ 105°C, %	29.9
Specific gravity @ 25°C	.874
Flash point (TCC), °F	105
Color (Gardner)	4
Viscosity (G-H) @ 25°C	A-5

(Products of the Harshaw Chemical Company, Dept. CP, 1945 E. 97th St., Cleveland 6, Ohio . . . or for more information check CP 8275 on handy form, pages 2 and 3.)

Greenhouse tests show value of plant-growth regulator . . .

slows growth of main tomato plant stem, and flowering of marigold . . . without harm

Another growth-regulating chemical for plants has recently been announced. The chemical — called CDAA — was found to inhibit growth of the main stem of tomato plants and the flowering of marigold in greenhouse experiments. There was neither visible injury to the plants nor over-all slow-down of growth. Potential uses for the compound are not confined to these two plants, of course.

Plant-growth regulators temporarily restrict supplies of hormones that induce growth of one part of a plant system, without affecting growth of other parts. They are already being used to prevent fruit drop before harvest time and undesirable growth of vegetable plants during storage or shipment. Such compounds may hold the key for protecting budding plants against frost.

Chemically, CDAA is α-cyano-β-(2,4-dichlorophenyl) acrylic acid.

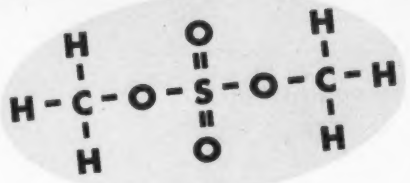
(Announced by Battelle Memorial Institute, Dept. CP, 505 King Ave., Columbus 1, Ohio.)

Handling, storing, shipping ethyl chloride

Safety rules and regulations for handling, storing, shipping and disposing of ethyl chloride are outlined in the latest of the safety data sheets. While ethyl chloride vapors are highly flammable and tend to form explosive mixtures with air, the bulletin points out that it can be handled with safety if employes are properly educated and are familiar with its hazards.

Also included in the 16-page sheet are ICC regulations regarding loading and unloading and first aid procedures to follow in case of exposure to excessive vapors or in the event of direct contact. To obtain Chemical Safety Data Sheet SD-50 remit 25c direct to Manufacturing Chemists' Association, Inc., Dept. CP, 246 Woodward Bldg. Washington 5, D. C.

AN IDEA-CHEMICAL FROM DU PONT



DIMETHYL SULFATE

METHYLATION PROPERTIES

—Effective methylating agent for preparation of methyl-substituted oxygen, nitrogen or sulfur compounds.

—Methylation is usually carried out in the presence of an alkali. While the first methyl group reacts more readily than the second, both groups react readily in an essentially anhydrous system.

—High reactivity toward active hydrogen compounds and high boiling point of Dimethyl Sulfate makes autoclaving unnecessary in methylation reactions. Methyl halides frequently require autoclaves in similar reactions.

SOLUBILITY DATA

—Soluble in water to extent of 2.8 g/100 cc at 18°C. Hydrolysis is rapid at or above this temperature.

—Soluble in alcohol, ether, benzene.

CORROSION CHARACTERISTICS

—Anhydrous Dimethyl Sulfate is inert to iron and steel . . . mildly corrosive to copper. Hydrolyzed solutions have the corrosion properties of sulfuric acid.

Here's an economical methylating agent you should investigate

Dimethyl Sulfate, a highly reactive compound, is a useful methylating agent in organic synthesis. Offering economy in methyl-substitution reactions, it is more reactive at low temperatures than most other methylating agents, and has a high boiling point (188.8°C.) which permits its use at atmospheric pressures.

A clear, colorless liquid, Dimethyl Sulfate is soluble in alcohol, ether and benzene. It is used in the manufacture of a number of synthetic drugs, including caffeine, codeine, antipyrine and methyl hydrazine sulfates. In addition, it finds application in the manufacture of dye intermediates.

Why not investigate the use of Dimethyl Sulfate in your business? We'll be glad to send you more information on this reactive methylating agent—specifications, properties, suggested uses, etc. Just send in the coupon below or write to: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept., Wilmington, Delaware.

AVAILABILITY: Du Pont Dimethyl Sulfate is shipped in tank cars, special 55-gallon returnable steel drums (net wt. 555 lbs.) and special 10-gallon returnable steel drums (net wt. 100 lbs.).

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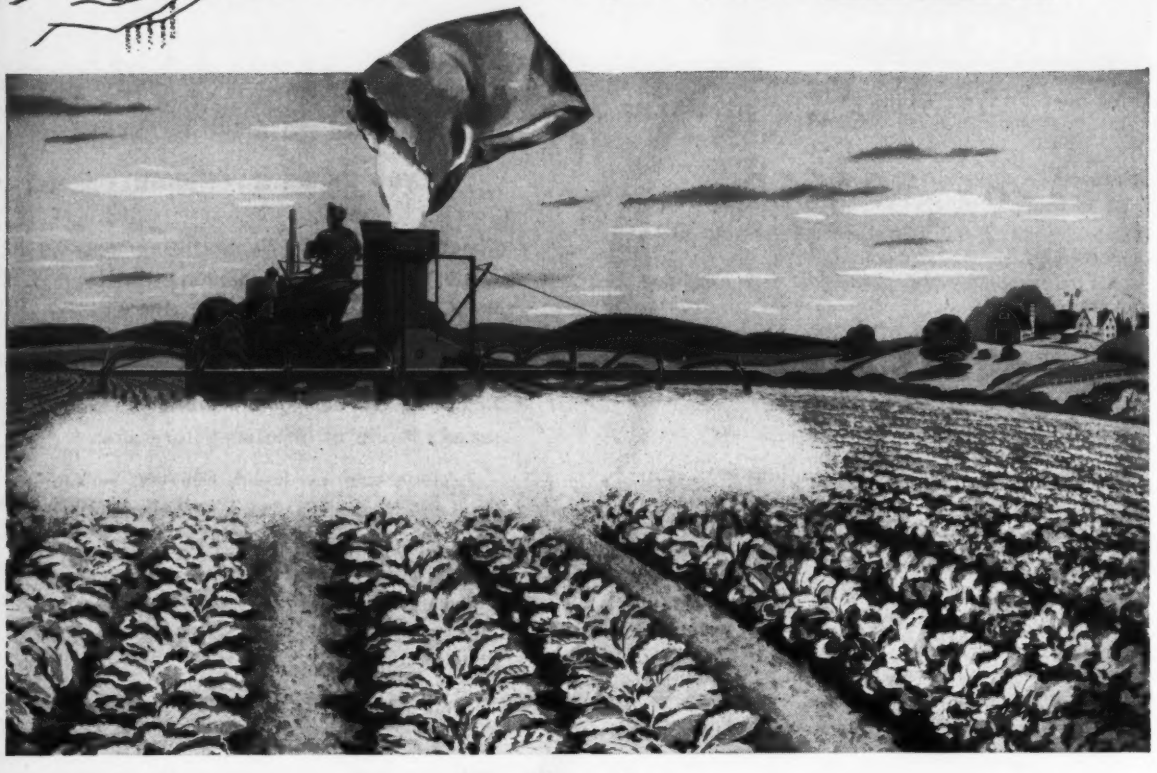
E. I. du Pont de Nemours & Co. (Inc.)
Polychemicals Department 583, Wilmington 98, Del.

Please send me more information on Du Pont Dimethyl Sulfate—specifications, properties, suggested uses, bibliography, etc. I am interested in evaluating Dimethyl Sulfate for the following applications:

Name _____ Title _____
Firm _____
Address _____
City _____ State _____

When inquiring check CP 8276 on handy form, pgs. 2-3

How Celite Mineral Fillers give a product better dispersion . . .



Making a better "killer" of insecticides

To increase the effectiveness of their product... add more "killing power"—many leading producers of insecticides add Celite Mineral Fillers to their dust as a standard ingredient.

This use of these diatomite powders is based primarily on (1) their light weight and great bulk which improve dispersion of the poison, and (2) their high absorption capacity that produces dry dust concentrates from both low melting point solids and liquid poisons, thereby increasing the potency of the final product.

These and other unusual physical characteristics adapt Celite Mineral Fillers to numerous industrial uses.

THESE CELITE PROPERTIES BENEFIT MANY TYPES OF PRODUCTS

Because of their inertness and great bulk per unit of weight, Celite Mineral Fillers make ideal bulking agents for powders and pastes. Their tiny multi-shaped particles interlace to stiffen and strengthen admixtures. The microscopically small facets of these particles diffuse light so effectively that they will give any desired degree of flatness to a surface film. And their porous, thin-walled cellular structure can be utilized to impart a delicate, non-scratching abrasive action.

You may find Celite the "extra something" needed to lift your product above competition. Why not discuss its application to your problem with a Celite engineer? For further information and samples, write Johns-Manville, Box 60, New York 16, N. Y. In Canada, 199 Bay St., Toronto, Ontario.

CHECK LIST OF PRODUCT BENEFITS OBTAINABLE AT LITTLE COST WITH CELITE MINERAL FILLERS

- Added Bulk
- Better Suspension
- Faster Cleaning Action
- Greater Absorption
- Improved Color
- Better Dielectric Properties
- More Durable Finish
- Increased Viscosity
- Elimination of Caking
- Higher Melting Point
- Better Dry Mixing
- Improved Dispersion

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville CELITE®

MINERAL FILLERS

When inquiring check CP 8277 on handy form, pgs. 2-3

Introduce flushed colors especially for use as industrial coatings . . .

vehicle employed is a medium-short, soya bean oil alkyd resin

Introduction of a line of flushed colors especially for use as industrial coatings has been announced by a chemical firm. Previously, the firm's catalog of flushed colors did not include products in a vehicle specifically designed for industrial use.

The colors are applied by spraying, dipping, roller-coating or electrostatic spray, and reportedly work equally well for air-dry or bake-dry finishes. Vehicle employed in the colors is a medium-short, soya bean oil alkyd resin containing 36% phthalic anhydride. A complete range of 25 organic and inorganic colors, including anatase and rutile titanium dioxide pigments, makes up the new line. Colors are available in 55 and 35 gal drums, and 5 gal pails.

(Announced by The Hilton-Davis Chemical Co. Division, Sterling Drug Inc., Dept. CP, 2235 Langdon Farm Road, Cincinnati 13, Ohio . . . or for more information check CP 8278 on handy form, pages 2 and 3.)

Hydrogenated castor oil, 12-hydroxystearic acid

Twelve-page, 2-color folder highlights description, properties, and applications of manufacturer's 12-hydroxystearic acid and hydrogenated castor oil. Hyfac 442 & 2142 Bul is issued by Emery Industries, Inc., Dept. CP, Carew Tower, Cincinnati 2, Ohio. When inquiring specify CP 8279 on handy form, pages 2 and 3.

Easily replaceable bromine atom permits selective substitution of halogen atoms . . .

has potential use as monomer—particularly in the production of polyamines and polysulfides

Uses: *Organic Synthesis*—actually a rather small number of reactions involving ethylene chlorobromide have been reported. However, its structure and chemical properties indicate potential utility as an organic intermediate. This is illustrated by the following reactions where the bromine atom is preferentially replaced:

$$ClCH_2CH_2Br + NaCN \longrightarrow ClCH_2CH_2CN$$
$$ClCH_2CH_2Br + NaHSO_3 \longrightarrow ClCH_2CH_2SO_3H$$

Since compound is essentially bi-functional, indicated potential use is as monomer, particularly in the production of polyamines and polysulfides.

Solvent—combines many of the solvent properties exhibited by chlorocarbons and bromocarbons.

Agriculture—preliminary evaluation studies suggest it to be a useful soil fumigant for the control of certain undesirable soil organisms. Indications are that product has a relatively low phytotoxicity and may be used in the presence of some growing plants.

Features: Easily replaceable bromine atom permits selective substitution of the halogen atoms.

Description: Ethylene chlorobromide is a colorless liquid with a sweet chloroform-like odor.

PROPERTIES

Boiling pt, °C	106.7
Freezing pt, °C	−17.0
Sp gr @ 35/4°C	1.7091
@ 25/4°C	1.7273
@ 0/4°C	1.7723
Density change @ 25°C/°C	−0.00182
Density, lb/gal	14.4
Vapor pressure @ 29.7°C, mm	40
Change in vapor pressure with temperature (20-30°C range), mm/°C	1.6
Refractive index @ 25°C	1.4870
@ 35°C	1.4820
Viscosity, cp @ 25°C	1.09
@ 0°C	1.56
Surface tension @ 25°C (Capillary rise), dynes/cm	34.5
Flash point	none

(Being offered in commercial quantities by Food Machinery and Chemical Corp., Westvaco Chemical Div., Dept. CP, 161 East 42nd St., New York 17, N. Y. . . . or for more information check CP 8280 on handy form, pages 2 and 3.

"The Sorbitol Story"

Application data and chemical characteristics on sorbitol — as used by the chemical, food, drug, cosmetic, textile, tobacco, confectionery, paint, and other process industries — are described in a 24-page, digest-size booklet. Tables, charts, and text define the composition and properties of various sorbitol products. Also discusses their uses in formulations. Issued by the Atlas Powder Company, Dept. CP, Wilmington, Del. When inquiring specify CP 8281 on handy form between pages 2 and 3.

Three pure isomers of trichlorobenzene available

Organization of a unique pilot plant is now yielding 3 isomers of trichlorobenzene: (1,2,3-trichlorobenzene; 1,2,4-trichlorobenzene; and 1,3,5-trichlorobenzene), each with a purity of 99% or better.

Adequate working samples of each of these pure isomers are available, and are expected to find many uses in applications where mixed isomers are unacceptable. They should provide a starting point for the synthesis of weed killers and other plant hormones. Further uses are seen in the preparation of bactericidal soaps and solutions, as solvents in dyestuff synthesis, and in the fields of photographic and leather processing chemicals.

(Products of the Solvay Process Division of Allied Chemical & Dye Corporation, Dept. CP, 61 Broadway, New York 6, N. Y. . . . or for more information check CP 8282 on handy Reader Service slip, pages 2 and 3.)

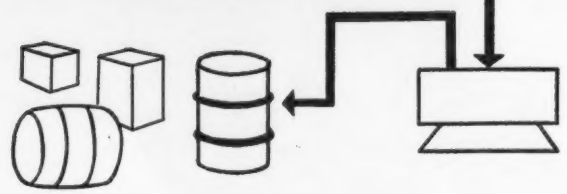
EVERY TIME this big unloading bucket bites into a bargeload of coal, we're starting another chemical miracle on its way to you. Your new synthetic fiber suit, the drug that "knocked" your flu so fast and the bright enamel on your new car could all have been born in the coal chemical recovery mains of our coke ovens.

But *this* may be the real miracle: From our coking operations we produce not only coke and coal chemicals, but we follow through with basic products like pig iron and cement on one hand and finished chemical products like Pittsburgh Insecticides and Dyestuffs on the other—all in *one continuous, interlocking operation.* This highly developed integration—and it now embraces ten operating divisions—requires considerable engineering skill and years to perfect. But the payoff is the unusual production efficiency and product quality control that have become synonymous with Pittsburgh Coke & Chemical.

WAD 4841

PITTSBURGH COKE & CHEMICAL CO.

When inquiring check CP 8283 on handy form, pgs. 2-3



PUT THIS PLANT
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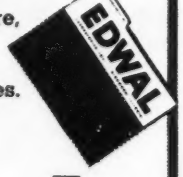
EDWAL manufactures fine organics for the chemical process industries — intermediates for dyestuffs and drugs, flavoring materials, new cyclic intermediates for creative research consideration — and private label products on contract.

In the twenty years since the company's founding, EDWAL has acquired a reputation for technical competence, imagination in research and development, production efficiency, and excellent chemical quality.

If you want to add these plus factors to your product — consult with EDWAL on raw materials that fit your process — ask for complete information on contract arrangements.

Send for this recently-revised EDWAL brochure, covering the company's history, financial position, operations in chemical, photographic and contract manufacture, personnel, plant site, building space utilization, utilities, equipment particulars and research facilities.



EDWAL

LABORATORIES, INC., RINGWOOD, ILL.

When inquiring check CP 8284 on handy form, pgs. 2-3

Possible to reduce soldering time by 2/3rds . . .

with dip-tinning and dip-soldering aid; said to lower tinning temps 200 degrees F

Uses: Aid for dip-soldering and dip-tinning of such items as commutators, leads, slip rings, etc.

Features: Reported to lower tinning temperatures 100-200°F, cut soldering time by as much as 2/3rds, and leave no corrosive residue.

Description: TE-400 Electro Tin is a combination of organic chemicals and metallic tinning agents and available either as a heavy paste or thin sirup. It replaces the usual neutral rosin and alcohol flux in operations involving dip soldering where non-corrosive residues are specified.

Parts to be soldered are first coated with the aid by dipping or painting, and then the parts lowered immediately into the hot metal bath. After sufficient immersion time, parts are then withdrawn and processed in usual manner.

(Product of Fusion Engineering, Dept. CP, 4504 Superior Ave., Cleveland 14, Ohio . . . or for more information check CP 8285 on handy form, pages 2 and 3.)

Deals with properties, uses of polyvinyl methyl ether

According to 12-page bulletin, properties of polyvinyl methyl ether suggest its use in adhesives, surface coatings, paper, textiles, heat-sensitized latices, and other similar uses.

Bulletin which discusses properties, uses and other features of polyvinyl methyl ether is issued by Commercial Development Dept., General Aniline & Film Corp., Dept. CP, 435 Hudson St., New York 17, N. Y. When inquiring specify CP 8286 on handy form, pages 2 and 3.

Non-toxicity suits stabilizer for polyvinyl chloride films used in food packaging

Uses: Stabilizer for polyvinyl chloride resins.

Features: Developed to meet the most rigorous toxicity specifications, product makes possible the utilization of polyvinyl chloride in many non-toxic applications.

Description: Stabilizer #90 has been accepted by the Meat Inspection Service of the USDA as an ingredient of vinyl plastic film intended for the packaging of meat and meat products.

The amount of stabilizer used in the film should not exceed approximately 3%. Extraction tests have been run on film containing Stabilizer #90, and on the basis of results obtained, the Food & Drug Administration has no objections to the use of this product in film for wrapping food. Maker feels that this justifies the use of the stabilizer in all non-toxic applications.

1. ANTICAKING AND CONDITIONING AGENT

Furafil is a flowable, highly absorptive powder widely used to reduce caking.

2. BURN-OUT MATERIAL

Furafil burns slowly without undue evolution of gas which makes it useful as a burn-out material in several applications.

3. REDUCING AGENT

A typical ultimate analysis of Furafil shows a carbon content of 52%. This carbon will provide a reducing atmosphere for use in metal processing operations such as smelting, and in the reduction of sodium sulfate in glass manufacture.

4. EXTENDER

Furafil is a modified ligno-cellulose material, which is of value as a filler in phenolic resin molding powders and extender in phenolic resin adhesives.

5. AVAILABLE

Furafil is produced throughout the year. It is shipped in bulk or in bags.

The above applications may suggest places in your processes where Furafil can be of help to you. Our sales staff will be happy to work with you in any applications you have in mind.

Write today for additional information and a sample of Furafil. It will help you.

*Reg. U. S. Pat. Off.

The Quaker Oats Company
QO CHEMICALS DEPT.

336N THE MERCHANDISE MART
CHICAGO 54, ILLINOIS
Room 536N, 120 Wall St., New York 5, N. Y.
Room 436N, P.O. Box 4376, Portland 8, Oregon

When inquiring check CP 8287 on handy form, pgs. 2-3

WHAT'S YOUR FILTRATION TARGET?

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Industrial Effluents
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Cutting and Cooling Oils
Pentaerythritol
Gelatin and Glue
Tallow and Lard
Waxes and Emulsions
Swimming Pool Water
Petroleum Additives
Antibiotics
Soap Solutions
Fruit Juices
Sodium Tungstate
Alum
Whiskey, Wine, and Beer
Industrial Process Water
Nicotinic Acid
Alkyd Resins
Edible Oils
Pectin
Gold Cyanide

You can't miss with SOLKA-FLOC—The uses for SOLKA-FLOC as a filter aid are so many and varied that we can't list them all here. No matter what you filter, however, SOLKA-FLOC may be just what you need for faster, safer filtering. Write to our Technical Service, Department FB-3, in Boston, describing your filtration system.

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When inquiring check CP 8288 on handy form, pgs. 2-3

Stabilizer is a combination of several active components which yield high stabilizing efficiency by synergistic action. It imparts good initial color and clarity to transparent films and sheets, and contributes excellent lubricating properties which facilitate processing operations. Stabilizer #90 can also be used in non-toxic plastisol formulations where it combines stabilizing properties with moderate gelling action. This action yields compositions suitable for knife coat and dipping applications as well as for slush molding operations.

It has been found effective in compositions plasticized with various non-toxic plasticizers of the phosphate, citrate, and glycollate type as well as with dioctyl phthalate. In a test formula containing 100 parts polyvinyl chloride resin and 40 parts octyl diphenyl phosphate, 4 parts of Stabilizer #90 prevented resin degradation at 350°F mill temperature for 45 minutes and gave sufficient light stability for most applications.

Typical Properties	
Appearance	white fluffy powder
Composition	combined metallic soaps
Moisture, %	1.5
Fineness (through 200 mesh), %	99.0
Specific gravity	1.05

(Product of the Witco Chemical Company, Dept. CP, 260 Madison Ave., New York 16, N. Y. . . . or for more data check CP 8289 on form, pgs. 2-3.)

Process lightens color, improves blending of linseed oil

A packaged grade of linseed oil is now available which has been improved by a process its producer calls "Dymerization". Notable improvements include more rapid blending with paint pigments, speedier mixing, and better pigment dispersion qualities than with regular-type linseed oils.

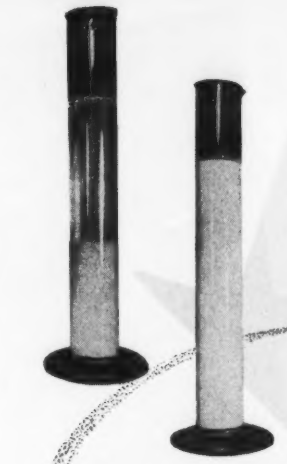
Essentially, Dymerization changes and controls the molecular structure of pure, raw linssed oil. Resultant product is a brilliant golden color that will not stain or discolor paints as do dark oils.

(Product of Cargill, Inc., Dept. CP, 200 Grain Exchange, Minneapolis 15, Minn. . . . or for more information check CP 8290 on form, pgs. 2-3.)

Effects of platy extenders on paint systems

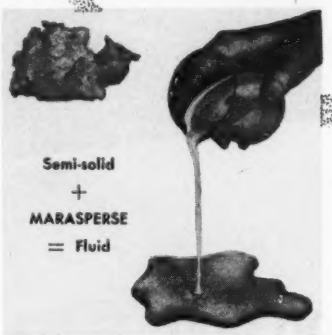
"An Investigation of the Effect of Platy Mica Extender on the Behavior of a Paint System Comprised of Vinyl Primers and a Vinyl-alkyd Paint" titles 4-page folder.

Complete set of illustrations depict results of a systematic salt-fog and printing series for specified periods of time. Tech. Bul. 13 is issued by the Wet Ground Mica Association, Inc., Dept. CP, 420 Lexington Ave., New York 17, N. Y. When inquiring specify CP 8291 on form, pgs. 2-3.



PUT MORE SOLIDS INTO SUSPENSION WITH

MARASPERSE



MARASPERSE dispersants are more effective and considerably more economical to use. They are completely soluble in water, are non-hygroscopic, non-fermenting, non-caking, free-flowing powders.
With the addition of as little as only .05% to a maximum of 3.0% of MARASPERSE, (based on weight of solids), from 35% to over 300% MORE solids may be dispersed and maintained in fluid suspension.

MARASPERSE *stabilizes water dispersions of insoluble solids by setting up repulsive forces on the particles, thereby preventing flocculation.*

MARASPERSE products are used in making water suspensions of organic pigments, sulfur, clays, titanium dioxide, carbon black, phenyl-beta-naphthylamine, etc., as dispersing and leveling agents for dyestuffs. Also as deflocculants and to increase strength in the manufacture of ceramic ware. As grinding aids and emulsifiers. In formulation of wettable powder insecticides, industrial cleaners, boiler water treatment chemicals. For mud control in oil well drilling operations.

Write for File No. 301. for additional information on Marasperse products. You will receive complete and specific technical data. Our research staff will welcome the opportunity to cooperate with you.

MARATHON CORPORATION
CHEMICAL DIVISION
ROTHSCHILD • WISCONSIN

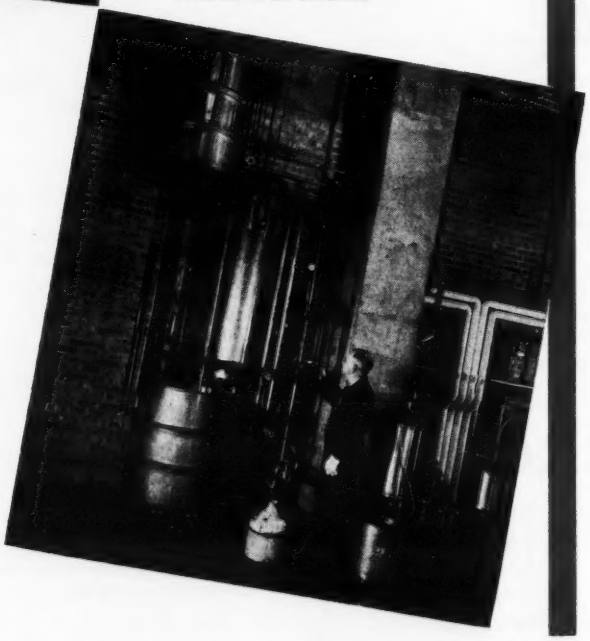
When inquiring check CP 8292 on handy form, pgs. 2-3

ideas

An overall veiw of industrial waste processing facilities. Large furnace in which radioactive combustible wastes are burned is located at the center. The wastes, contained in one cubic foot fiber drums, are lifted to the charging platform by means of a hoist (shown at right). Ashes are collected in the small metal drum which is located directly beneath the furnace. Flue gases are passed through liquid scrubbing chambers where the radioactive particles are removed

Ion exchange has been considered for some time as a possible means for removing radioactive ionic impurities from wastes. A research and development program was established to investigate this method and to compare cost of processing by ion exchange with that of evaporation

It was determined in small-scale tests that it is possible to remove radioactive ions even though the ion exchange resin is exhausted with regard to hardness ions. To confirm these findings, pilot plant equipment pictured below was constructed and operated. Small-scale test results were corroborated with plant industrial wastes. Cost data continue to be collected



Estimate $200,000 savings with system handling disposal of "hot" liquid wastes

Calculated cost of processing gal of drain wastes at atomic energy site is 9c

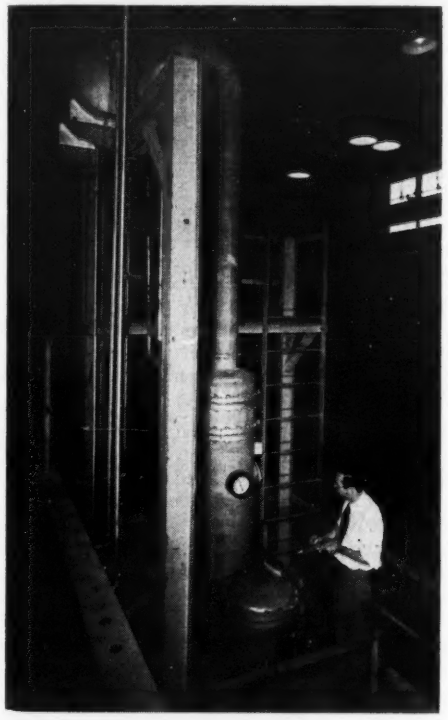
PRIMARY aim of Argonne National Laboratory in processing radioactive wastes is to reduce the active material to the smallest possible volume — on a practical cost basis; and to return to the environment, only wastes with activities nearly undetectable from the natural background.

In full operation now for 2 years is a complete disposal system at Argonne which achieves an estimated savings of $200,000 in treating liquid wastes. Calculated cost of processing a gallon of drain wastes is computed at 9c. Since storing the unprocessed liquid waste would cost about $1 per gal, assuming a rate of 290,000 gal per year of dilute drain waste, a gross annual savings of about $260,000 is accomplished. Against this is charged the cost of operating the (to-be-described) retention-tank system of an estimated $60,000 per year. Hence, the net annual saving of $200,000. Of the three type wastes processed by Argonne — gaseous, solid and liquid — the latter will be considered first.

Liquid

Output of all sinks and drains in working areas where radioactivity is present is about 50,000 gal daily. This waste, though containing radioactivity little above background level, is treated as suspect and conducted to 1500 gal glass-lined retention tanks. Latter are operated in pairs: when one is

full, flow is diverted to the other and the first sampled. If the radioactivity is less than a certain level, 10^{-5} $\mu c/cm^3$, contents are discharged directly to a laboratory-site drain which also carries other aqueous wastes which are known to be free of activity. This combined discharge then enters settling tanks, operated batch-wise, where chemical treatment may be applied. Approximately 80% of the retention tank liquid wastes are discharged without treatment. If the activity of the tank waste is greater than 10^{-5} $\mu c/cm^3$, it is brought (via tank trucks) to the effluent control area. Here, it is discharged to holding tanks with a combined capacity of 36,000 gal.



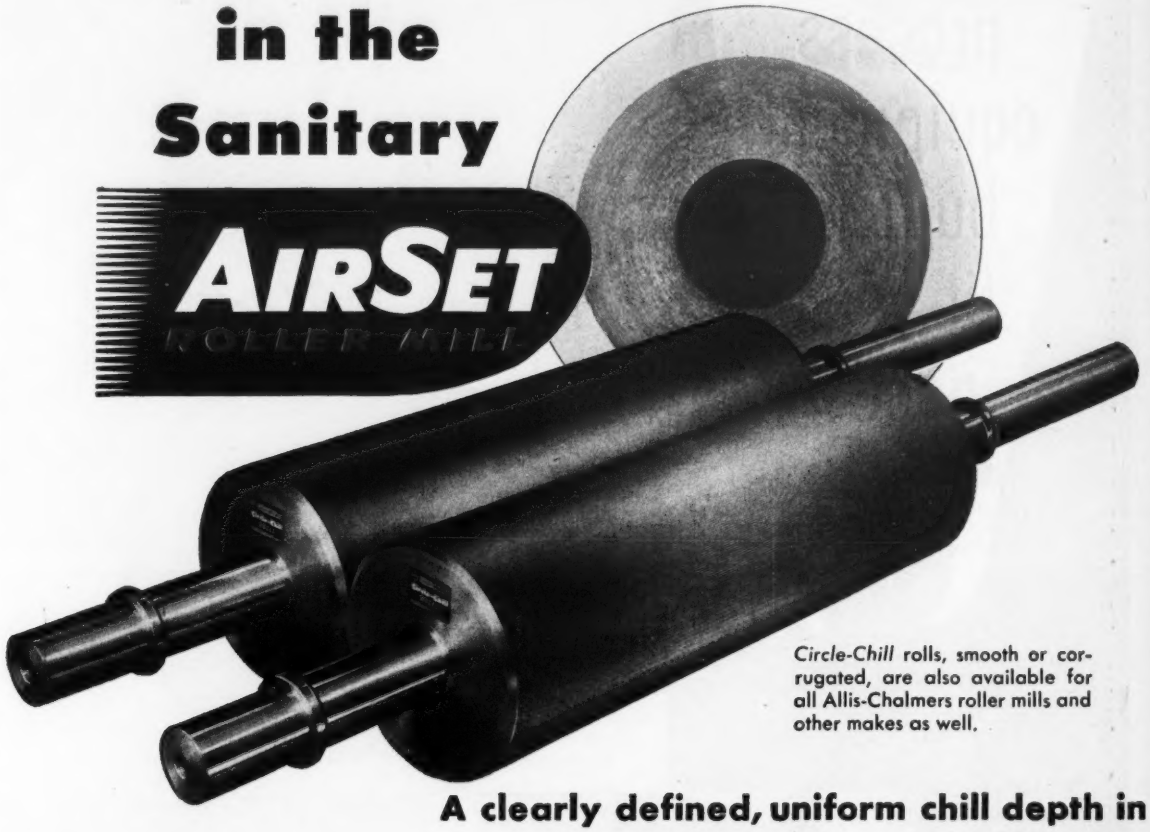
Primary evaporator shown is capable of processing 150 gal of liquid waste per hour. Processed liquid is adequately decontaminated for direct disposal

Wastes requiring processing are drawn from the holding tanks to a primary evaporator where they are concentrated. In addition, 90% of the liquid discards from bench-scale laboratory experiments are bled in with the above-tolerance laboratory drain wastes. Evaporator was constructed by Struther-Wells Corp., Warren, Pa. and has been demonstrated capable of concentrating contaminated liquid waste from 0.08 to 45% by weight of solids. Overhead is monitored and discharged to the laboratory-site drain. Bottoms are conducted to a solidification process.

Solidification involves neutralizing, if necessary, with slaked lime and adding Portland cement. Mixture is allowed to harden before shipment to the final storage area.

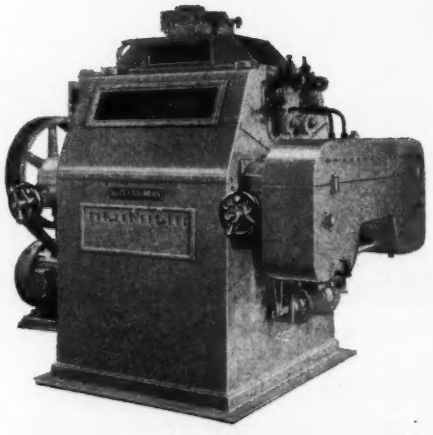
(Continued on next page)

ROLLS LAST LONGER in the Sanitary



Circle-Chill rolls, smooth or corrugated, are also available for all Allis-Chalmers roller mills and other makes as well.

A clearly defined, uniform chill depth in Circle-Chill rolls provides maximum wear



The Extra Wear built into *Circle-Chill* rolls gives you a bonus of many additional months of profitable milling.

The toughness of the *Circle-Chill* roll is the result of a recently developed centrifugal casting technique. A wear-resistant, white iron shell is bonded to a softer gray iron core. Centrifugal casting makes possible a longer wearing milling surface with no soft gray iron permeation.

OTHER FACTORS IN LONGER ROLLER LIFE

In the *AirSet* roller mill there is no uneven roller wear. Rolls wear evenly because a high speed vibrating type feeder distributes stock uniformly over rolling surfaces. Air from a single source maintains equal pressure on both ends of rolls. When feed stops, rolls open automatically to prevent destructive metal-to-metal contact. Get complete facts from your nearby A-C sales office or write Allis-Chalmers, Milwaukee 1, Wisconsin, for Bulletin 06B7218.

AirSet and *Circle-Chill* are Allis-Chalmers trademarks.

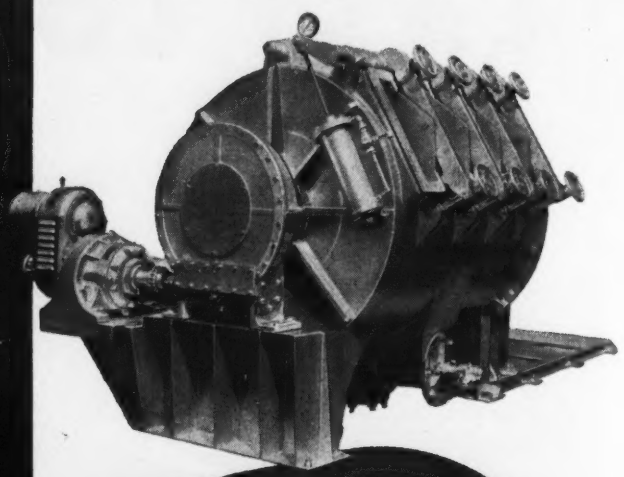
ALLIS-CHALMERS

A-3979

When inquiring check CP 8293 on handy form, pgs. 2-3

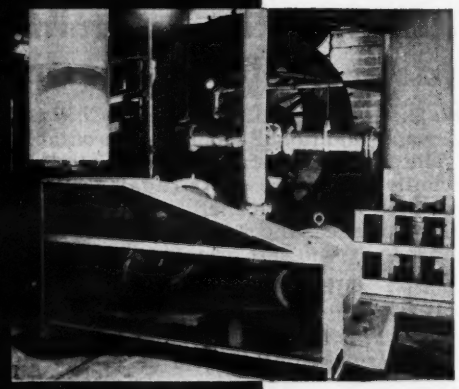
dependable process equipment built to fit your needs

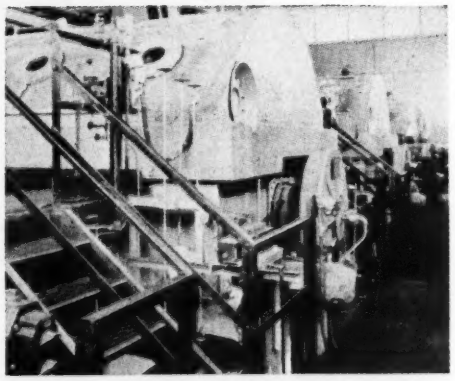
Conkey Rotary Leaf Pressure Filters; a preeminent type for clarification filtration; builds a cake, washes out solubles, dewaters and discharges the cake, all without necessity for opening up of the filter.



CONKEY FILTERS
FOR CHEMICAL PLANTS

Conkey Rotary Hopper Vacuum Dewaterers, high capacity top feed vacuum filters for fast filtering and rapidly segregating slurries, require no adjustments for feed variations in consistency and particle size.





Conkey Hooded Rotary Drum Vacuum Filters effectively handle filtrations where volatile solvents are a component of the slurry feed or of the wash application.

PROCESS EQUIPMENT DIVISION
GENERAL AMERICAN
TRADE MARK

Process Equipment Division
Send for latest bulletin on Filters

GENERAL AMERICAN TRANSPORTATION CORPORATION
Sales Office: 10 East 49th Street, New York 17, New York
General Offices: 135 South La Salle Street, Chicago 90, Illinois
In Canada: Canadian Locomotive Company, Ltd., Kingston, Ontario
OFFICES IN ALL PRINCIPAL CITIES
Other General American Equipment: Turbo-Mixers • Evaporators • Dewaterers Towers • Tanks • Bins • Dryers • Pressure Vessels

When inquiring check CP 8294 on handy form, pgs. 2-3

(*Continued from preceding page*)

Solid

A great variety of solid materials become contaminated with radioactivity: filters, paper (absorbent, note, news, filter), clothing, shoes, laboratory glassware, and processing equipment of all sizes and shapes.

In all areas where activity is present, a number of 7-½ gal cans made of stainless steel and fitted with a foot-operated slide top are provided. Inside each of these dry active waste cans is a cardboard liner. Two such cans — one for combustible, the other for noncombustible waste — are provided at each location. Special containers are provided when requested for bulky or highly active wastes.

A storage area is provided for retention of solid, noncombustible radioactive waste. It consists of concrete-lined trenches with removable wooden covers and is monitored regularly to see that active liquids are not building up because of ground water seepage and rain. This storage space is expensive — costing about $7 a cu ft. Collection process costs another $5/cu ft, making the total cost of solid storage almost $12/cu ft.

This high cost of storage is the reason combustible wastes are segregated. Nearly 80% by volume of the solid wastes are combustible. They are incinerated in a unit indicated in accompanying photograph which has a burning chamber capable of handling 100 cu ft in an 8-hr day.

The charge is introduced through a chute equipped with interlocked doors to prevent escape of radioactive gases, and the fiber drums build up on the grates of the furnace. The ash falls through the grates into water and settles down the collection cone through an 8" plug valve into a collection drum fitted with an expendable cloth bag filter. When the drum is full of ash, a new container is inserted, and the filter bag is used to dewater the ash to sufficient dryness to allow storage in freezing weather.

Combustion gases are, of course, freed of their radioactivity before discharge. They are washed, scrubbed and heated above their dew point before being passed through a filter of the AEC type. Latter removes radioactive particles to well within tolerance levels under operating conditions. From the filter the gases are drawn through a positive displacement blower and discharged above the roof.

Gaseous

In the main, gaseous wastes are filtered or scrubbed. Bulk of these wastes comes from hood and cave exhausts. In the newer laboratories at Argonne, the air which goes into the hood is conditioned and filtered. Easily accessible at the back of the hood are four Fiberglas filters that serve as prefilters for both dust and radioactivity. The exhaust gases are conducted through an AEC filter before they reach the blower that discharges them through 3' stacks on the roof.

Dust in the exhaust air from machining operations involving uranium is removed in Rotoclone scrubbers. Off gases from vessels involving larger-scale chemical operations require special treatment. Usually a

caustic batch scrubber is used to remove chemical fumes and radioactive gases such as iodine. The scrubbed gas is then conducted into the cell exhaust, filtered, and vented through stacks.

(Information courtesy of Argonne National Laboratory (Operated by the U. of Chicago for the U. S. Atomic Energy Commission), P. O. Box 299, Lemont, Illinois.)

Rubber provides thread for stainless pipe

Because of difficulty in welding, as well as threading stainless steel pipe, Cooper Alloy Foundry, Inc., Hillside 5, N. J., developed a coupler (Quikupl) with a rubber sealing ring bonded inside. Primary difficulties in producing the rubber ring were in maintaining close tolerances and the degree of hardness of compound from one batch to the next.

Manufacturer's engineers tried an injection molding process using Neoprene W. Procedure resulted in an exceptional resistance to compression set — only 15% at 70 hours at 212° F.

(Sealing rings are products of Minnesota Rubber & Gasket Co., Dept. CP, St. Louis Park, Minneapolis 16, Minn.)

Produces metal-to-metal bonding generally stronger than riveted or spot-welded joints . . .

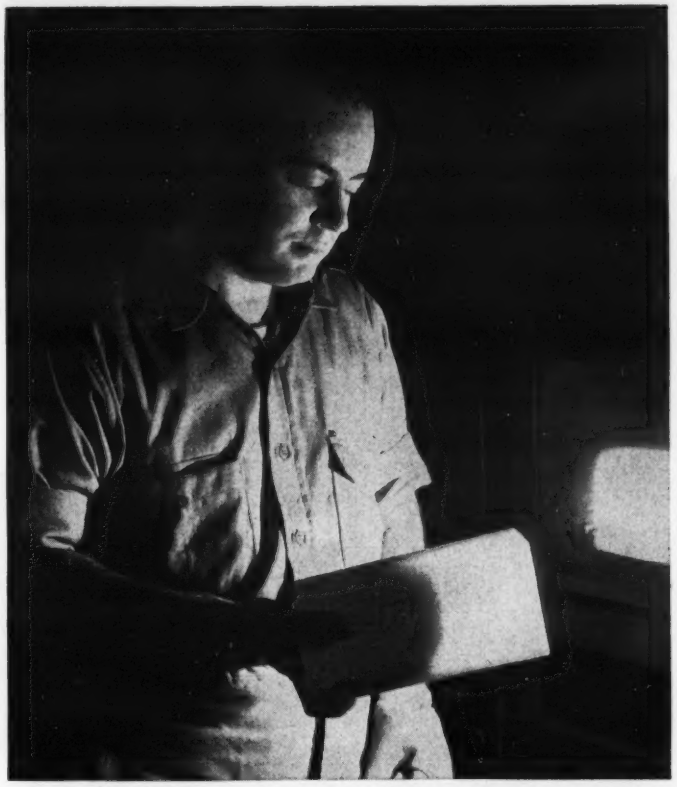
possible to take advantage of this characteristic by designing lighter structures

A patented process, used extensively in England until now, has proved itself applicable in joining parts of a jet airliner, bonding of brake and clutch linings of motor vehicles, manufacture of sports goods, and the fabrication of veneered aluminum. Redux is the name applied to the process and to the synthetic resin adhesive used. Developed primarily for joining light alloys and aluminum alloys to wood, it is also suitable for bonding metal to rubber as well as metal to thermosetting plastic materials.

Redux is used in the wings and pressurized fuselage of the British 600 mph "Comet" jet airliner. Here it makes possible aerodynamically smooth surfaces and the use of thinner gage alloys than would have been possible with countersunk rivets. Tests which preceded adoption of Redux for bonding British "Churchill" tank clutches showed that riveted specimens failed after about 200 miles, whereas bonded assemblies gave a life of 2000 miles. Today Redux also forms an integral part of the clutches for Jaguar racing cars. Brake linings for motor cars, commercial vehicles and industrial machinery are also being Redux-bonded to their shoes.

Redux metal-to-metal joints are generally stronger than riveted or spot-welded joints of similar dimensions. They are not affected by temperatures

(*Continued on next page*)



Striking evidence of this refractory's insulating ability: Though one end of the brick is incandescent—having been heated to over 2000 F—the other end is held *in the bare hand.*

"Bubble-brick" insulates at over 3000 F

How an ALFRAX BI brick looks when cut through with a diamond wheel. This discloses the thousands of voids formed by the hollow fused-alumina "bubbles."

Here is one of the most heat-resistant refractories available. And one of the most stable. It shows very little shrinkage, or other changes — *even at maximum burning temperatures of most fuels!* It stands higher heats (has a P.C.E. value 39-40, equivalent to 3389-3425 F), and greater loads than previously possible with low heat capacity refractories.

ALFRAX BI refractories are literally made of bubbles; hollow spheres of Al_2O_3 specially bonded together. They are light in weight (a 9" straight weighs only 4.8 lbs.); have low thermal conductivity (average 7 Btu/hr, sq ft and °F/in. of thickness at 2200 F); and therefore have low heat capacity. They are also one of the most inert materials known. They are unaffected by furnace atmospheres, or combustion gases of commercial fuels.

These "bubble-brick", as they are sometimes called, are used in main linings as sidewalls, arches, doors, etc. and also for backing-up linings. They are used in many types of furnaces (e.g. powdered metallurgy furnaces, aluminum reverberatory furnaces, ceramic kilns, synthesis gas generators). The advantages are: longer refractory life, closer heat control, and a furnace that heats up quicker and needs less fuel.

ALFRAX BI refractory is available as brick, special shapes, standard cements, and as a *castable* cement that you just mix with water and pour. For information about the properties of this and other unusual super refractories by CARBORUNDUM just mail this coupon.

Super Refractories by

CARBORUNDUM
Trade Mark

"Carborundum" and "Alfrax" are registered trademarks which indicate manufacture by The Carborundum Company

Dept. S-33 Refractories Division
The Carborundum Company,
Perth Amboy, N. J.

Please send free copy of Super Refractories booklet to:

NAME_____

POSITION_____

COMPANY_____

STREET_____

CITY_____ ZONE____ STATE____

When inquiring check CP 8295 on handy form, pgs. 2-3

(Continued from preceding page)

below freezing point, nor are they appreciably affected by heat up to about 80°C (176°F). A special formulation is Redux 64 which is said to retain high strength at temperatures of from 200 to 250°C (392 to 482°F).

Joints reportedly are not attacked by molds, fungi or other organisms, nor are they affected by water, gasoline, oil or other common solvents. In addition, Redux does not cause corrosion.

The adhesive consists of a liquid resin, reddish-brown in color, and a white powder. After the materials to be bonded have been cleaned a thin coat of the liquid is spread on the surfaces, followed by application of the powder. Bonding together of the treated surfaces is carried out under heat and moderate pressure: about 20 minutes at 145° C (293°F) constitutes a normal curing cycle. Liquid has storage life of about 12 months under cool conditions, while the powder remains usable for an indefinite period.

(Redux will be manufactured and marketed by the Plastics Division, Ciba Co., Dept. CP, 627 Greenwich St., New York 14, N. Y. . . . or for more information check CP 8296 on handy form, pages 2 and 3.)

High resistance to heat imparted by insulation in transformer . . .

also provides tenfold increase in dielectric strength

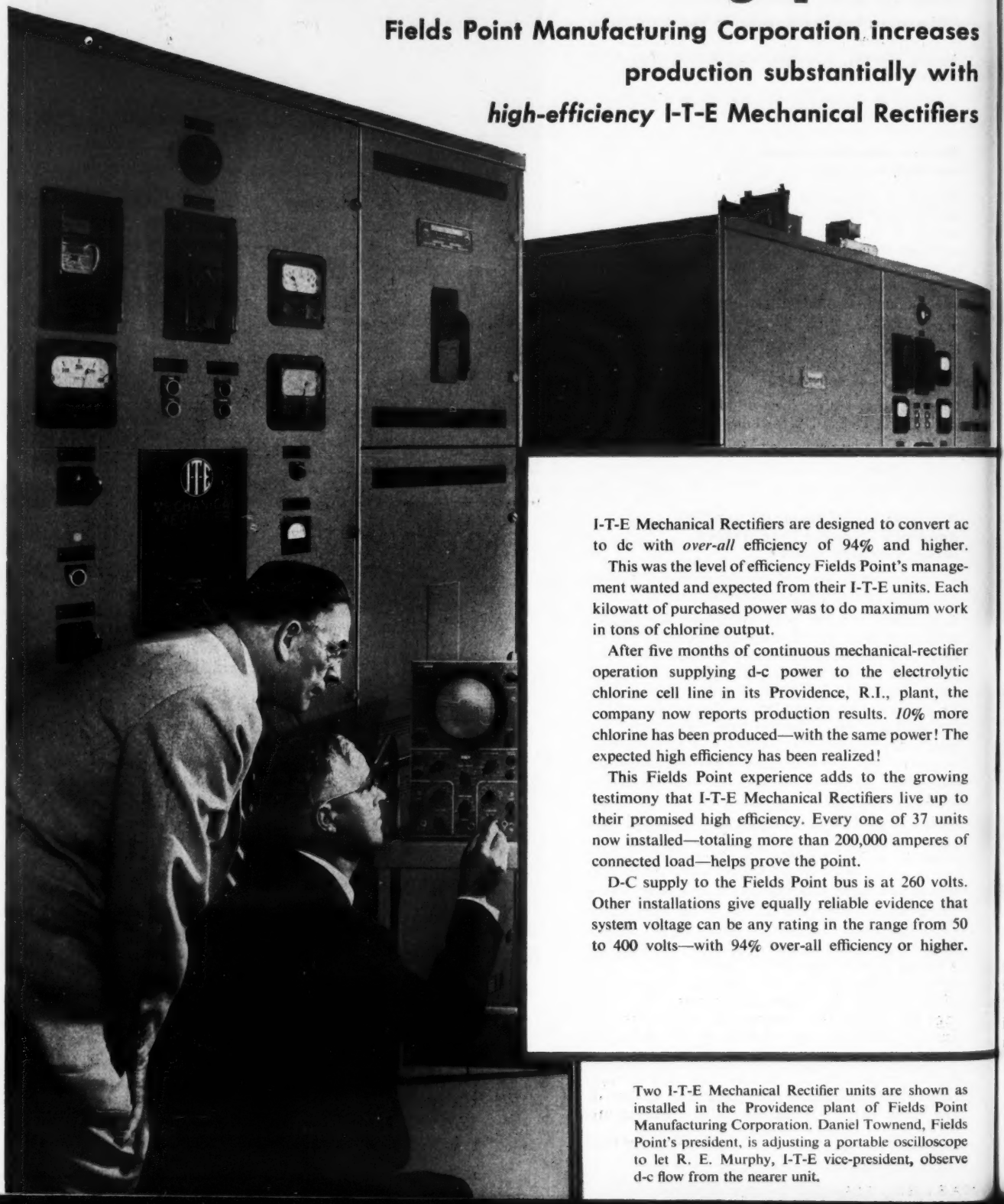
Insulation being used in transformer is reported to provide exceptionally high heat resistance. It is also said to increase dielectric strength ten times that of conventional standards.

Application of Mylar Polyester film is claimed to be the first use of this material in the insulating field. It is combined with Quinterra and Dacron on Class B insulated magnet wire.

Combination of the three products in insulation virtually eliminates failure at such vulnerable points as "turn-to-turn" and "layer-to-layer" junctures. Additional protection is achieved in the transformers by use of Quinglas, which possesses unusually high physical strength.

The same incoming power

Fields Point Manufacturing Corporation increases production substantially with *high-efficiency* I-T-E Mechanical Rectifiers



I-T-E Mechanical Rectifiers are designed to convert ac to dc with *over-all* efficiency of 94% and higher.

This was the level of efficiency Fields Point's management wanted and expected from their I-T-E units. Each kilowatt of purchased power was to do maximum work in tons of chlorine output.

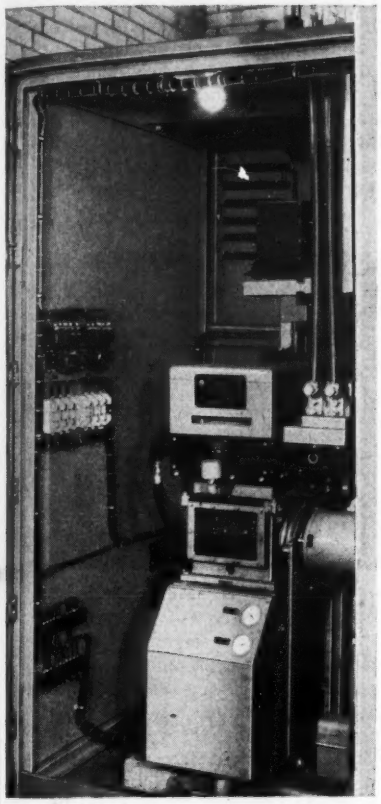
After five months of continuous mechanical-rectifier operation supplying d-c power to the electrolytic chlorine cell line in its Providence, R.I., plant, the company now reports production results. *10%* more chlorine has been produced—with the same power! The expected high efficiency has been realized!

This Fields Point experience adds to the growing testimony that I-T-E Mechanical Rectifiers live up to their promised high efficiency. Every one of 37 units now installed—totaling more than 200,000 amperes of connected load—helps prove the point.

D-C supply to the Fields Point bus is at 260 volts. Other installations give equally reliable evidence that system voltage can be any rating in the range from 50 to 400 volts—with 94% over-all efficiency or higher.

Two I-T-E Mechanical Rectifier units are shown as installed in the Providence plant of Fields Point Manufacturing Corporation. Daniel Townend, Fields Point's president, is adjusting a portable oscilloscope to let R. E. Murphy, I-T-E vice-president, observe d-c flow from the nearer unit.

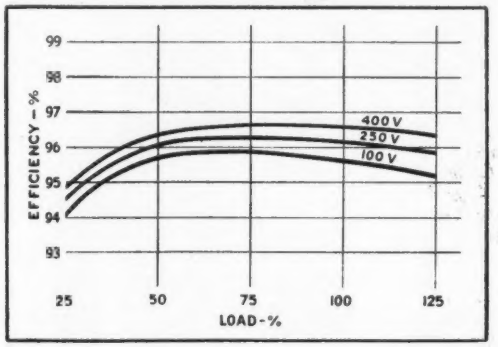
but 10% more chlorine!



One of the two contact mechanisms in the Fields Point installation of I-T-E Mechanical Rectifiers. Each Rectifier is a standard I-T-E unit with design rating of 5000 d-c amperes.

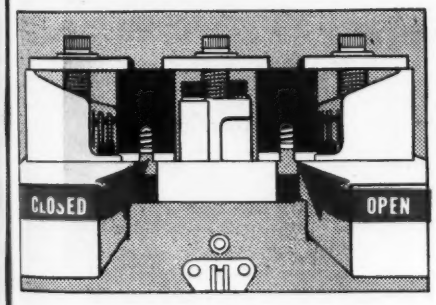
HIGH EFFICIENCY THROUGHOUT LOAD RANGE

During continuous operation at the Fields Point plant, load has remained at or very near 100%. Should load vary at any time to as low as 25% or up to 125%, over-all conversion efficiency will still be high. The EFFICIENCY curve below is characteristic of I-T-E Mechanical Rectifier performance, and represents a principal advantage: flexibility for plant production schedules while getting the most out of a-c power purchased.



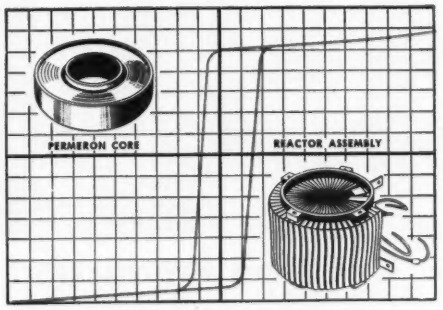
HERE'S WHY

Here are two basic reasons why I-T-E Mechanical Rectifier users get 94 kw (and more) of d-c power for every 100 kw of a-c power they buy:



Solid silver contacts held closed by powerful springs, give highest conductivity between a-c and d-c networks.

Sparkless low-loss commutation is obtained by interposing a Permeron*-core reactor between a-c supply and contact mechanism. This provides a brief period during which current in a contact is zero, allowing sufficient time for sparkless contact closing or opening.



**I-T-E's special saturable core material. Typical Permeron magnetization curve is shown above.*

Get the facts—If you are planning new or expanded a-c to d-c conversion facilities, it will pay you to investigate high-efficiency I-T-E Mechanical Rectifiers. They increase production or cut power bills in many kinds of applications—electrolytic chemical production, metal refining, motor load. Write for details.

BULLETIN 5106—covers theory, design, construction, standard arrangements.

BULLETIN 5204—gives details of I-T-E's special magnetic core material, *Permeron.*

BULLETIN 5205—presents engineering explanation of high efficiency provided by I-T-E Mechanical Rectifiers.

MECHANICAL RECTIFIERS

I-T-E CIRCUIT BREAKER CO.• Rectifier Division • 19th and Hamilton Streets, Philadelphia 30, Pa.

EPD—Canadian Mfg. and Sales: Eastern Power Devices, Ltd. Toronto

Use of these materials is said to make possible performance levels that have been physically and economically impossible for dry type transformers. Units with this insulation are available in capacities ranging from 1 to 3000 kva, up to 15,000 volts.

(Transformers are products of Marcus Transformer Co., Inc., Dept. CP, Hillside, N. J.)

Cotton carpeting — latex coat makes it a success

Growing importance of cotton to the carpeting industry was underscored recently when the Magee Carpet Co. announced it had started large scale production of a full line of cotton carpeting. Wide width tufting machinery has caused the cotton carpeting industry to come into its own, company reports.

Secret of Magee's cotton carpet construction is a new synthetic plastic latex — called Lotol. A coating of the plastic on the back of the carpet locks the individual loops to the carpet backing. The latex also imparts durability and hand to the rug body. Following the coating operation, the carpet is dyed.

(Lotol is a product of the United States Rubber Company, Dept. CP, Rockefeller Center, New York 20, N. Y. . . . or for more information check CP 8297 on handy form, pages 2 and 3.)

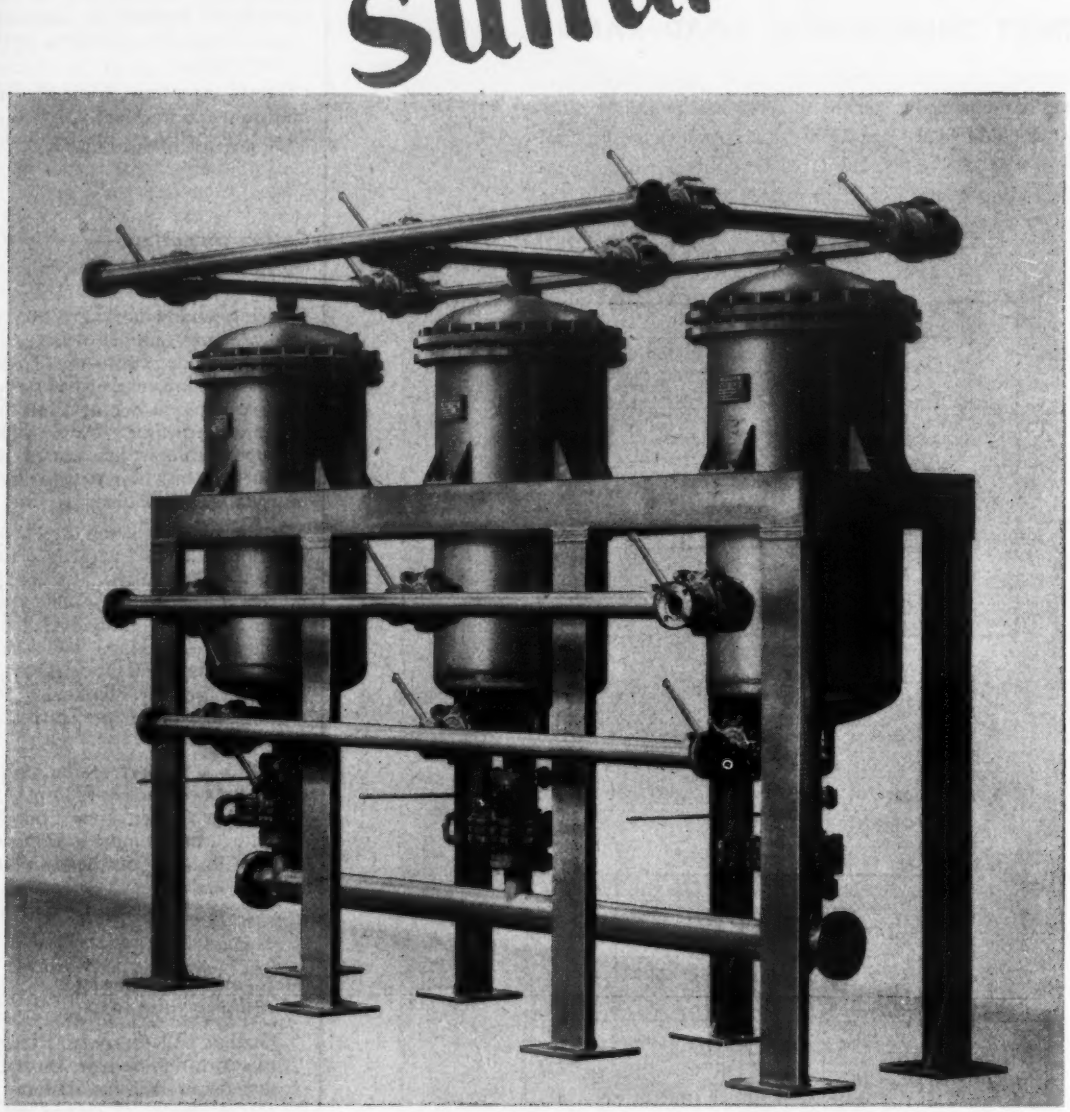
Pictures show theory of making magnets

Graphic bulletin contains sketches which outline basic theory of magnetism and utilization of natural forces of magnetism in industrial magnets. Each diagram outlines a particular aspect of the story and is accompanied by an explanatory caption.

"What Makes a Magnet?" is issued by Eriez Manufacturing Co., Dept. CP, 1945 Grove Dr., Erie, Pa. When inquiring specify CP 8298 on handy from, pages 2 and 3.

For more information on product at left, specify CP 8299 . . . see information request blank between pages 2-3.

ADAMS Molten Sulfur FILTERS



Upgrade Your Raw Sulfur • Cut Acid Production Costs

Pioneers in the filtration of molten sulfur, the R. P. Adams Co. now offers the widely tested and approved Poro-Carbon filters in complete, packaged plants. You are invited to write for details in addition to the following salient features.

★ Cleaned by backwashing without disassembly
★ Permanent, inert Poro-Carbon filter media
★ Includes filter aid feed and sulfur pump
★ Filters, piping and valves steam jacketed
★ Extend catalyst effectiveness in acid production

R. P. ADAMS CO., INC.

243 E. PARK DRIVE • BUFFALO 17, N. Y.

When inquiring check CP 8300 on handy form, pgs. 2-3

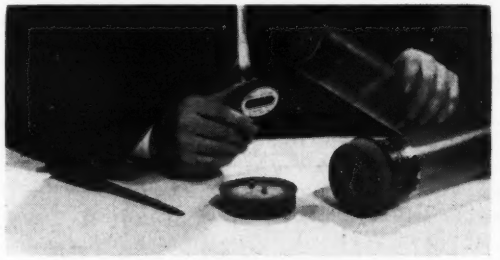
Radioactive tracer signals where pneumatic tube is jammed . . .

a little cobalt in each mail carrier keeps messages moving between departments of Carborundum

A 60c specimen of radioactive cobalt is saving much time in locating jammed mail carriers in The Carborundum Company's pneumatic-tube communications system in its 40-acre plant and executive office location at Niagara Falls, N. Y. About 8000 feet of tube carry customer orders, payroll sheets, and emergency correspondence — 1500 to 2000 messages per day — between 16 departments. And it's important to keep this mail moving.

Jammed mail carrier with tracer is found quickly by Geiger counter

The carriers get jammed because of one of several reasons. Opening of exit and entrance doors of the pneumatic-tube system, for instance, may lower the vacuum within to a point where the carriers stop or slow down. Should the front face lip of the carrier get trapped in an opening at a tube section during such stoppage or slowdown, it may not be able to break loose again when full vacuum is restored. Overloading of the system, and opening of the rear of the carriers during transit are other causes of jamming.



Radioactive cobalt is in paper sealed in plastic (right hand). This assembly is hermetically sealed into the tubular mail carrier

Carborundum used to send men along the tube, poking metal snakes into it at section joints, until the jam was located and could be cleared. This slow, tedious, and costly method often took hours, sometimes days. In the interim, quick mail communication between points serviced by the jammed tube or tubes was at a standstill.

About a year ago, a company employe suggested that radioactive material, fastened to the carriers, would make them easy to trace. Following up, the company worked out a method of applying the radioactive cobalt. Absorbent paper discs are soaked in a solution of cobalt, and then placed between pieces of plastic. With the use of heat and pressure, the discs are sealed into the plastic, and the assembly is hermetically sealed into the carrier. No health hazards are involved because of the small amount of radioactive cobalt employed with each of 200 carriers.

Now, one man with a Geiger counter, can find the jammed carrier in minutes. The drop of cobalt is the only investment in radioactives so far. It will last for some time, since its half-life is 5 yr.

(Information courtesy of The Carborundum Company, Dept. CP, Niagara Falls, N. Y.)

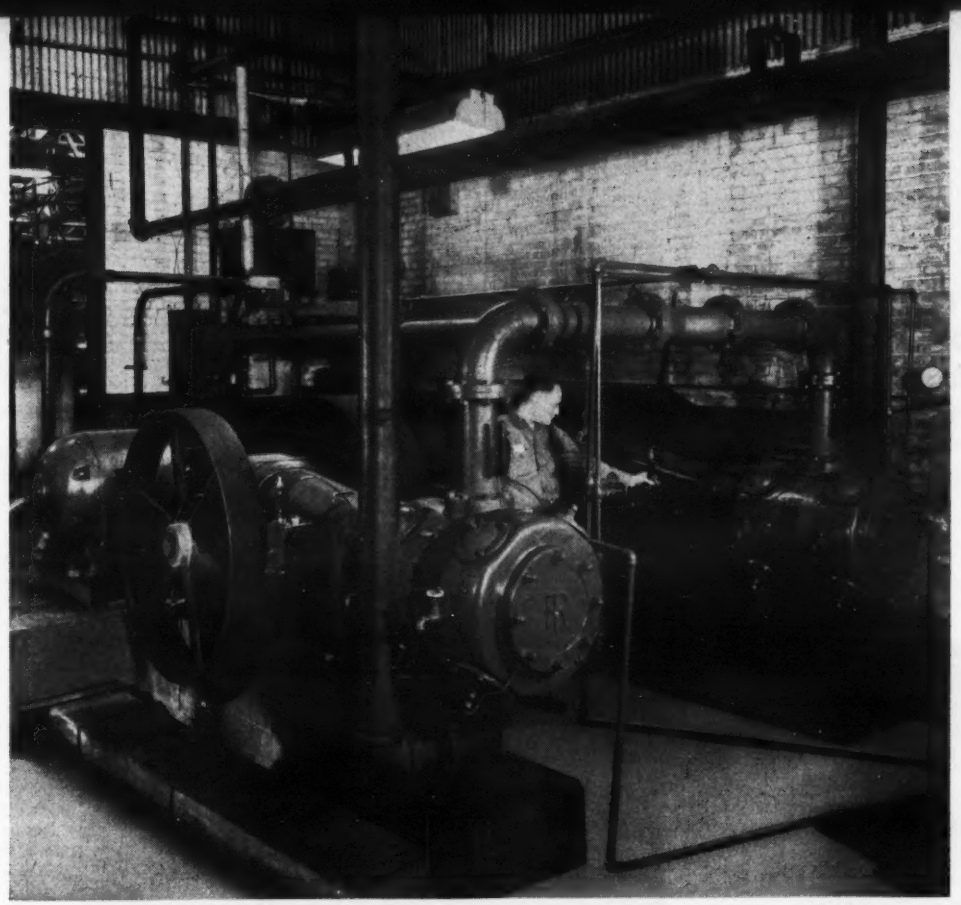
Guide for distribution of power

Two-color, 28-page, illustrated bulletin serves as a guide for plant engineers on electric power distribution in plants.

Among topics covered are utility distribution practices and methods of buying electric power. It tells what to do when a choice of primary voltages is available. Application of primary switches and circuit breakers are described, as well as types and arrangements of primary cables and types of load-center distribution systems.

Other subjects discussed are the use of branch feeder switches, starters, and fuses and grounding of systems. Combined power and lighting is covered and a method of calculating interrupting capacity given. Bulletin also describes how to apply capacitors and presents methods of obtaining economical direct current, and other allied subjects. Bul GEA-5900 is issued by General Electric Co., Dept. CP, Schenectady 5, N. Y. When inquiring specify CP 8301 on handy form, pages 2 and 3.

For more information on product at right, specify CP 8302 . . . see information request blank between pages 2-3.



Compressors give carbon the air

• When carbon formed on the valves of these air compressors and the oil in the crankcases had to be changed frequently, operators of this Midwest plant called in a Standard Oil lubrication specialist. He recommended STANOIL Industrial Oil, a multi-purpose oil having a low carbon-forming tendency and containing effective oxidation and corrosion inhibitors. With STANOIL, the compressors gave the air to carbon troubles and have breezed through four years of hard operation without difficulty. Over the oil previously used, STANOIL has given four times longer service in the crankcases. These results . . . similar to the results you may expect . . . have led to the use of STANOIL in other equipment in this plant.

STANOIL
TRADE MARK
Industrial Oil

Find how this multi-purpose oil can benefit you by discussing it with a Standard lubrication specialist. You can contact him by phoning your local Standard Oil office.

Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

Send for this booklet...

See what Stanoil offers you...

You'll find the means to significant savings in this booklet. It describes the important qualities of STANOIL Industrial Oil and the resultant benefits which have made this multi-purpose oil the choice of midwest manufacturers for a host of important lubricating jobs. Discover how STANOIL will give you superior protection through its unique combination of six outstanding characteristics, including high stability and effective rust prevention. Find how STANOIL can simplify stock, storage, and inventory in your plant by replacing special-purpose oils in hydraulic systems, speed reducers, air compressors, machine tools, electric motors, auxiliary turbines, and a wide variety of circulating, bath, and bearing systems. Ask the Standard Oil lubrication specialist from your nearby Standard Oil office for this booklet, or write: Standard Oil Company (Indiana), 910 S. Michigan Ave., Chicago.

STANDARD OIL COMPANY **STANDARD** *(Indiana)*

Fabri-Valves are made from all types of stainless steel, monel or any combination. Fabri-Valves save on costly, unnecessary structure, yet you get complete internal and external protection wherever required. Each valve is a complete weldment of rolled plate, thus eliminating porous areas and insuring proper thickness. Fabri-Valve is the valve that meets your specific problem...fabricated to control corrosive solutions, gases, steam or water.

Rugged and durable, Fabri-Valve saves you money in every way . . . costs less, weighs less, is easily maintained and more economical to ship and install. 2" to 24" Fabri-Valves carried in stock . . . custom-made orders filled in 30 days. For complete details contact your nearest dealer.

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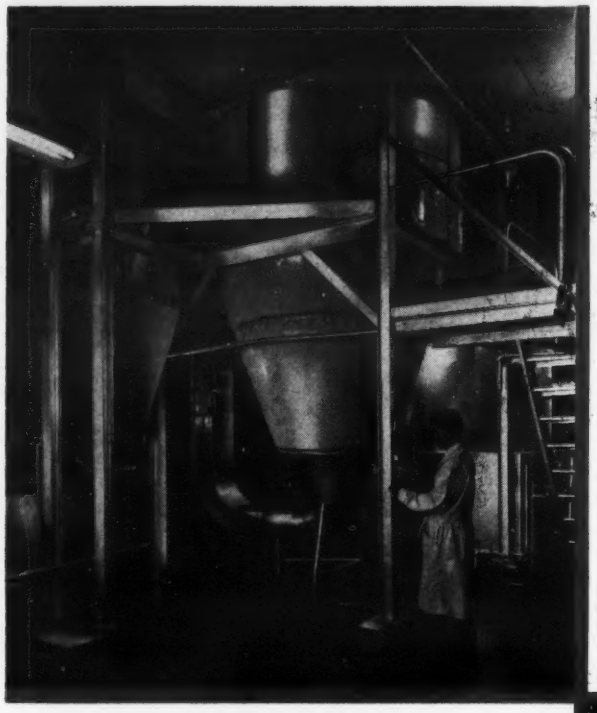
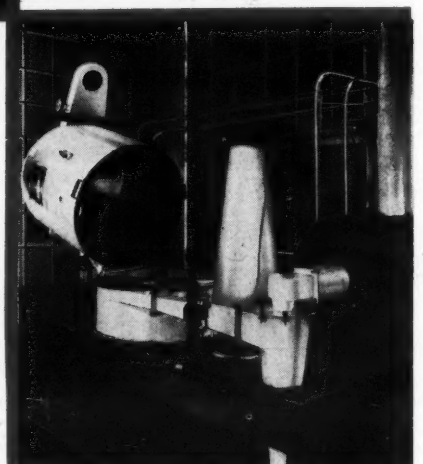
FELKER BROS. . . . . Marshfield, Wis.
NORTHWEST COPPER WORKS, Inc. . . . . Portland, Ore.
THOS. W. MacKAY & SON, Ltd. . . . . Vancouver, B.C.
CHANDLER BOYD CO. . . . . Pittsburgh 19, Penn.

When inquiring check CP 8303 on handy form, pgs. 2-3



Exact design and cost data for a contemplated commercial plant can be figured from the results of tests made in this stainless steel dryer. Here, the dryer is arranged so that all dried product, air, and vapors leave together and go to a dust collection system. But dryer can be set up so that bulk of the product is removed directly from it. Vanes around dryer shell let in cold air tangentially to cool already-dried material. Such an arrangement is of value when drying heat-sensitive materials or resins which might polymerize further under too much heat. The sweeping action of air entering these ports is also valuable in removing dried materials clinging to chamber walls

Preliminary runs are made in this laboratory spray dryer to provide early cost estimates for production scale operations. This unit is particularly adaptable to making a large number of short runs of different materials in a short time, because it comes apart easily for cleaning. Pharmaceutical manufacturers use it in production because of this



Spray dryer laboratory tests assure accurate design of production unit

Capital investment, operating cost for commercial dryer can be determined from 4-drum sample

As far back as 1929, Bowen Engineering was making use of test runs to provide data for design of commercial spray drying installations. The company has learned a lot about scale-up to various size units since then, but strongly holds the opinion that design of a spray dryer is still empirical . . . that each new material must actually be dried in a spray dryer, large or small, if completely satisfactory operation on a commercial scale, in the plant, is to be assured.

Not too long ago, Bowen opened a new test laboratory at North Branch Station, N. J. This lab gives the company the room it needs for doing test work on an increasing variety of products. It wasn't too long ago that spray drying was looked upon as a "last resort" when all other methods of drying failed, but now engineers often try the method first. The spray dryer may make crystallization, filtration, grinding, classification and other operations unnecessary in certain processes.

Spray drying of heat-sensitive pharmaceuticals and other products, soaps, detergents, and catalysts has been well-publicized. Not so well-known is the fact that calcining and denitration are reactions that may be conducted in the spray dryer; that inorganic compounds may be dried to a definite degree of hydration; or that a modification of spray drying — spray chilling — will produce a fine powder of a non-grindable material such as certain waxes or stearates.

The test laboratory holds a Bowen laboratory spray dryer (5 to 30 lb of water evaporation per hr), a stainless steel commercial spray dryer (100 to 700 lb water per hr), a spray chilling chamber, an evaporator, and a central analytical laboratory for preparation of material and analysis of product. Where necessary or desired, an 18′ diameter, concrete-chamber spray dryer is used — in custom drying or preparation of market samples, for example.

Drying temperatures can be run up as high as 1000°F when desired, but heat-sensitive materials can be dried at much lower temperatures by indirect heat.

Usual approach to the test work is to first dry a small amount of the customer's material in the lab spray dryer. Results of the run or runs in this stainless steel unit are sufficiently accurate and complete for preliminary estimates of capital investment and operating costs of production operations.

Test work then moves on to the stainless steel semi-commercial size dryer. Feed is mixed in a stainless steel tank, and is fed from another scale-mounted stainless steel tank to the dryer. When a disc type atomizer is used in the dryer, the feed is pumped from the weighing tank to the atomizing wheel by gear or centrifugal pump. A gravity-feed tank is available for non-pumpable materials. When nozzle type atomization is employed, a positive displacement pump feeds the spray assembly directly from the feed tank. The two types of atomization are readily interchangeable.

The laboratory also does some research in design fundamentals of spray drying. For example, a study of the design of atomizers for use with abrasive materials is currently being made.

Dryer can be arranged so that all the product is swept out with the air and vapors, or so that most of it leaves the bottom of the drying chamber while the air and vapors and fine material leave at a different point. A high-velocity cyclone dust collector is used for removing the product from the air and vapors. An Aerodyne collector is also used as a "polishing" collector to pick up some of the fine material passed by the primary collector.

Some of the materials handled at the laboratory must be kept under refrigerated storage, and about 150 sq ft of floor space are available in a refrigerator room for this purpose.

The company likes to emphasize most its good record of designing drying installations which deliver as predicted. Undoubtedly, much of its success is due to the step-by-step approach to final design.

Bowen is in a good position to feel out trends in spray drying applications. Currently, there is much interest in dyes and ceramics, plus indications of

(*Continued on next page*)

let's take a
CLOSER LOOK
at
CAUSES OF
TUBE FAILURES

Tubes are critical materials. Peak production of petroleum products is vital to the defense program. These are two urgent reasons for giving extraordinary attention *now* to getting optimum failure-free service from tube installations in petro-chemical facilities.

Of major importance in securing best operating results is an understanding of the numerous factors affecting tube life in high pressure, high temperature applications. Innumerable investigations of tube failures in such service over a 25-year period show that they are most frequently caused by circumstances other than actual physical defects in the tubes themselves. By far the most common causes of failures are overheating, excessive pressures, corrosion, and scaling due to tubes being subjected to improper operating conditions.

Enumerated are some of the more prevalent reasons, based on extensive studies, that account for excessive tube temperatures and attendant failures in chemical and petroleum conversion equipment. These are presented in the hope they will aid engineers and operating personnel to get better-than-ever service from their tube installations.

Through Mr. Tubes—your local B&W Tube Representative—is available a wealth of data on the behavior of tubing steels under conditions embraced in modern processing plants. It may pay you as it has so many others to call on this vast source of useful information.

Some Common Causes of Reduced Tube Life and Increased Maintenance

1. Excessive transfer rates in furnace equipment.
2. Coking of tubes — either expected or extraordinary.
3. Failure to clean tubes at regularly scheduled periods.
4. Unexpected radiation from bridge wall or refractory surfaces.
5. Improperly calibrated fuel meters on burner equipment.
6. Increase of product temperature over a safe design limit.
7. Unequal heating around circumference or along tube length.
8. Excessive furnace temperatures.
9. Guessing at tube metal temperatures.
10. Increase of pump pressure of maintain through-put.
11. Abuse during mechanical decoking, or scaling during burningout operations.
12. Improper supports resulting in bending or sagging.
13. Lack of control of furnace atmosphere to retard scaling.
14. Corrosion of ends or body of tube or both.
15. Carburization and exfoliation of carburized layer.
16. Abrasion or erosion due to coke in fluid stream.
17. Leaky header seats.

Bulletin TR-516 entitled "Some Experiences in Service", contains more detailed information on this timely subject, and is available upon request.

THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION
General Offices & Plants
Beaver Fall, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
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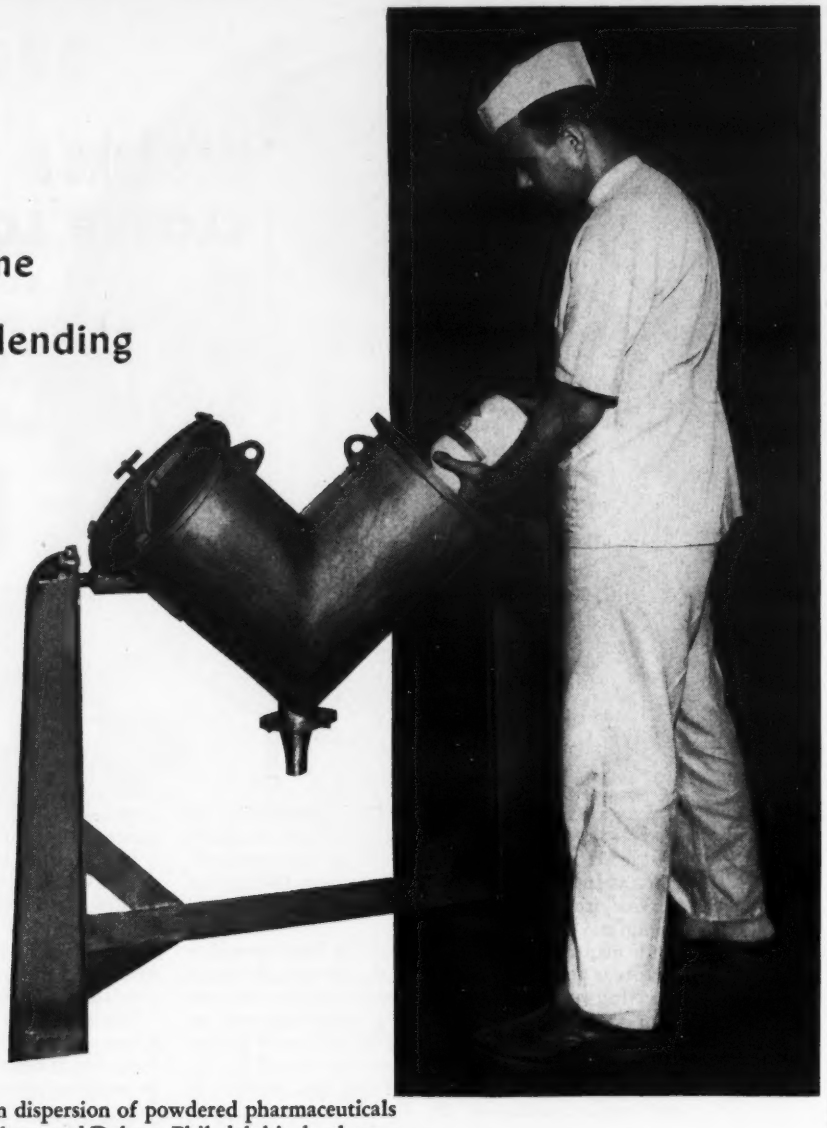
B&W STAINLESS and WELDED TUBES

TA 1737(P)

When inquiring check CP 8304 on handy form, pgs. 2-3

Sharp & Dohme

℞ for uniform blending



Maintaining uniform dispersion of powdered pharmaceuticals is achieved at Sharp and Dohme, Philadelphia, by the use of p-k twin shell dry blenders.

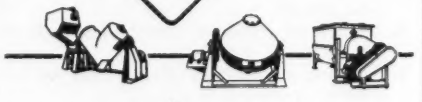
The gentle rolling-folding dividing and combining action of p-k blenders assures rapid blending of powders, grains, pellets or flakes in any combination, thoroughly and without attrition or over-blending. After use, clinical cleaning of the blender is quick and easy.

Sizes available range from 250-cu. ft. production blenders, down to pilot plant and 4- and 8-qt. lab sizes. Sizes 3 cu. ft. and smaller are available with transparent plastic shells.

To be sure of perfect blending with speed and repeatable uniformity, write today for complete information on p-k twin shell dry blenders.

Experimental blending tests or engineering help is available on call

Simply designed for better blending.



the **Patterson-Kelley Co.,** *Inc.*

7300 Lackawanna Ave., East Stroudsburg, Penna.

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101 Park Avenue, New York 17 • Railway Exchange Building, Chicago 4 • 1700 Walnut Street, Philadelphia 3 • 96-A Huntington Avenue, Boston 16 • and other principal cities

When inquiring check CP 8305 on handy form, pgs. 2-3

(*Continued from preceding page*)

increased activity in closed-circuit spray drying systems. This type of system is employed when the carrying liquid (often a solvent) is to be recovered, and frequently uses an inert gas instead of air.

(Bowen Engineering, Inc., Dept. CP, North Branch, N. J. . . . or for more information check CP 8306 on handy form, pages 2 and 3.)

Synthetic rubber gets basic patents, may enable tires to outwear the automobile . . .

could give conveyor belts greater wear resistance

Vast improvement in wearing qualities is claimed for a synthetic rubber, which has recently been granted patent recognition. Laboratory testing indicates that the service life of tires, conveyor belts, shoe soles and heels will be increased considerably by the synthetic's toughness and resistance to abrasion.

Among notable characteristics reported by manufacturer for this material are: 1) as a tire, it has two to five times greater wear resistance than the best "cold" rubber treads; 2) vulcanization time on these tires can be slashed by one-half; 3) equivalent to butyl rubber in air diffusion resistance and to Neoprene in oil resistance; 4) tensile strength is 50 to 100% better than any other types of rubber-like material; and 5) it can be produced in every color of the rainbow without losing any of its utility.

Chemically similar to Germany's recently announced Vulcollan, manufacturer's synthesis formula provides a "reaction factor" which makes possible the delayed processing on conventional rubber machinery (Vulcollan must be molded into finished product immediately after it is chemically composed).

Butadiene and styrene are conspicuously absent from this material: its basic ingredients are ethylene glycol and propylene glycol, mixed with adipic acid. The resulting polyester base is then treated with di-isocyanate as determined by the "reaction factor." The latter stops the solidifying reaction at a point where the resultant material can be further processed on mills, calenders, etc. When needed in production, it's given another treatment of di-isocyanate and formed into final shape without use of sulfur or accelerators for vulcanization.

Major obstacles to the synthetic rubber's wide application are in the areas of economic production of the raw material, development of processing methods, and improvement of its resiliency and adhesion.

(Reported through cooperation of The Goodyear Tire & Rubber Company, Dept. CP, Akron 16, Ohio.)

Reads gamma ray emission at press of a button

No special equipment, no special preparation of samples or slides, no intermediate steps, or no involved calculations are necessary to obtain measurements of gamma ray emission, according

to manufacturer of radiation detectors. Gammometer which employs radioactive sensitive cell permits direct measurement in microcuries of radiation at the press of a button.

Principle of operation, cell characteristics and specifications for gammometer units are given in 4-page bulletin. Bul 102 is issued by The Ohmart Corp., Dept. CP, 2347 Ferguson Rd., Cincinnati 38, Ohio. When inquiring specify CP 8307 on handy form, pages 2 and 3.

Human relations in industry—still long way to go . . .

average employe would be receptive to a program fostering closer management-worker ties

In spite of the growth of the field of human relations in industry in the past decades, the majority of businessmen and industrial executives have yet to be convinced of its need in their particular company. Many show negative attitudes toward standards and training, proper communications, sharply defined lines of authority, appreciation of individuals, the possibility of promotion, and adequate supervision.

Underlying every industrial process, no matter how mechanized, is human behaviour. It is important to remember that a) every machine is designed by men for men, b) every machine must be operated and maintained by men, and c) the success of each operation depends on the relationship of a number of men to the machine and to other men.

The aim of human relations in industry is the development of good will, elimination of friction, and the creation of high morale and team work. However, merely setting aside a budget for the development of a program to achieve these objectives is no guarantee of its success. Success depends upon the cooperation of all levels of personnel, from top management down to the lowest rank of employe.

A survey by The National Foremen's Institute indicates that the worker recognizes a need for understanding and communication from management for his best work. From questioning sixty thousand employes, the Institute found four main conditions under which the average employe felt he would do his best.

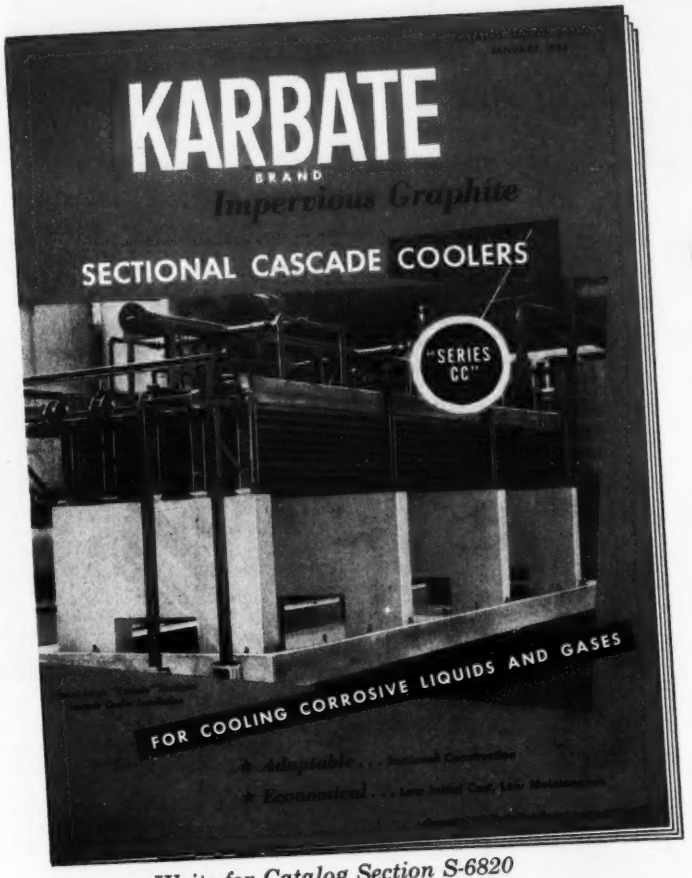
1) He is conscious of his working conditions — he wants a *good* place to work.
2) He wants full information about the job and what is expected of him.
3) He wants to be in the *right* job for the best use of his skills and abilities. From this he gets a feeling that he has a definite position on "the team."
4) He wants to feel he has a chance for promotion.

This is only a small part of the field of human relations in industry, but it indicates that employes are receptive to a program that will help them obtain these conditions.

(Summarized from talk presented by A. C. Croft, President, The National Foremen's Institute, Inc., Department CP, 100 Garfield Avenue, New London, Connecticut.)

NATIONAL CARBON OFFERS

GREATER VALUES . . .



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NEW "SERIES CC"
"KARBATE" BRAND
SECTIONAL
CASCADE COOLERS

- HIGH HEAT TRANSFER RATE
- LOW INITIAL COST
- HIGH COOLING WATER CAPACITY
- TYPE SN ARMORED CONNECTIONS
- RADIUSED RETURNS FOR LOW PRESSURE DROP
- REDWOOD WATER GUIDE STRIPS
- "TEFLON" GASKETS
- *THREE* STANDARD MODELS AVAILABLE FROM STOCK

. . . ALL "KARBATE" BRAND IMPERVIOUS GRAPHITE EQUIPMENT GIVES YOU:

- OUTSTANDING CORROSION RESISTANCE
- COMPLETE IMMUNITY TO THERMAL SHOCK
- FREEDOM FROM METALLIC CONTAMINATION
- LONG LIFE—LOW MAINTENANCE

The terms "National" and "Karbate" are registered trade-marks of Union Carbide and Carbon Corporation

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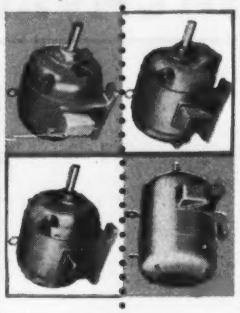
When inquiring check CP 8308 on handy form, pgs. 2-3

ELECTRO DYNAMIC

Extra dependable industrial motors

1 TO 250 HORSEPOWER (N.E.M.A. STANDARDS)



Extra large "free-flo" air channels.

Liberal size grease lubricated bearings.

One-piece cast iron frames.

Permanently aligned cast iron brackets.

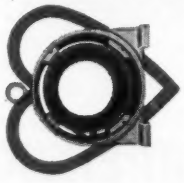
Also a complete line of Direct Current motors and generators

ELECTRO DYNAMIC
DIVISION OF GENERAL DYNAMICS CORPORATION
BAYONNE, NEW JERSEY

HEART of the motor

3. *Extra high-frequency testing* of insulation between turns.

4. *Extra care* in fitting coils into stator.



The WINDING is the

1. *Extra insulation* in stator slots and between phases.

2. *Extra impregnations* and bakings of the wound stator.

QUALITY SINCE 1880

WRITE TODAY FOR NEW ILLUSTRATED CATALOGUE NO. 375

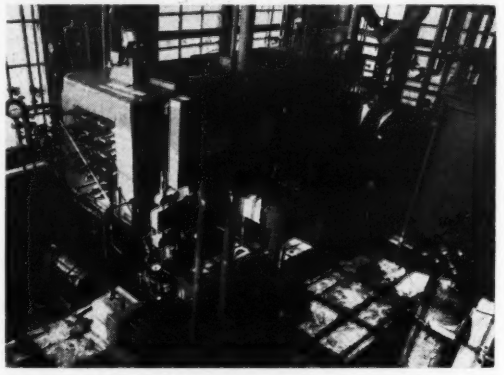
When inquiring check CP 8309 on handy form, pgs. 2-3

Pipeline polymerization makes "cold rubber" 50 times faster with less capital . . .

higher conversions may obviate need for expensive recovery of unreacted styrene and butadiene

"Cold rubber" can be made fifty times faster than current methods by continuous polymerization in a pipeline. The rubber, made in 15 to 20 minutes instead of the customary 10 to 12 hours, appears to have the same properties as that made by the longer process which is conducted in pressurized reactors. Cost of reactor or polymerization buildings and equipment could be reduced at least 50% by the new process, according to reports.

But even this is not the whole story. Engineers working on the process foresee a possibility of higher conversion (polymerization) per pass than has been possible with the older processes, which usually



Akron pilot plant for high-speed production of cold rubber. Polymerization takes place in stainless steel pipes which wind in and out through cold brine bath in background. Soap solution, styrene and butadiene are mixed in centrifugal pump (left background) which pumps it through reactor. Proportioning pumps in foreground add activator, catalyst, and shortstop from glass graduates on table

produce about a 60% conversion. Tires made from 75%-conversion rubber are now undergoing road tests. Next step, depending on outcome of these tests, may be tires made with 98%-conversion rubber.

With such high conversions, there would be no necessity of the expensive equipment used for stripping the unreacted styrene and butadiene from the soap solution after polymerization, as is now the case.

B. F. Goodrich Chemical Company, who developed the process under RFC contract, has been operating a pilot plant in Akron, Ohio, for some time, but is still piling up information which will be invaluable when and if the process is put on a commercial scale.

Unfortunately, existing man-made-rubber plants cannot be converted to use the process because of "insurmountable technical problems."

Scientists have recognized for years that cold rubber could be made much faster than it was being made, and had developed activators and catalysts which would provide such high rates of reaction. Until now, however, the engineering problem of removing

CLEAN SEPARATION— *between vapor and liquid*

when YORKMESH Demisters

are installed in:

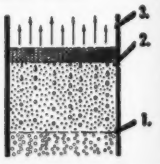
VACUUM TOWERS
DISTILLATION EQUIPMENT
GAS ABSORBERS
SCRUBBERS
SEPARATORS
EVAPORATORS
KNOCK-OUT DRUMS, ETC.

YORKMESH Demisters (entrainment separators—mist eliminators) have proved to be the answer to higher production and improved products when installed in new or existing equipment.

YORKMESH Demisters (made of finely woven wire) remove substantially all liquid entrainment even at increased vapor velocities. The net result: More production with higher quality.

How YORKMESH Demisters work:

1. Vapor disengaging from liquid creates fine liquid droplets.
2. The liquid droplets impinge and coalesce into large drops and fall off.
3. The vapor is now dry, entirely freed from entrained liquid.



Materials: Types 430, 304, 316 Stainless Steel, Monel, Carbon Steel, etc. Prompt shipment.

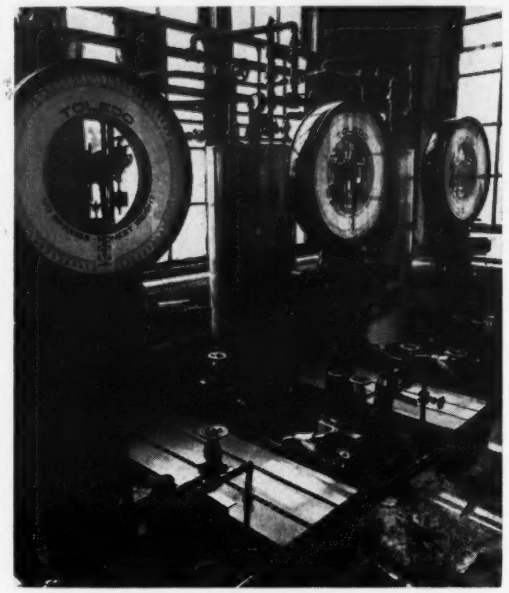
Write for new Catalog 13 for complete information and engineering data.

OTTO H. YORK CO., INC.
65 Glenwood Place, E. Orange, N. J.

When inquiring check CP 8310 on handy form, pgs. 2-3

the heat of reaction quickly enough has held up design of commercial installations.

The Goodrich pilot plant (750 pounds/24 hours) meets the heat transfer problem by polymerizing continuously in a ½" stainless steel pipe which traverses back and forth through a brine bath whose temperature is controlled to maintain approximately 41°F in the pipe. With this type of arrangement, a high ratio of heat transfer area to reactor volume is obtained.



Soap solution, butadiene, and styrene are taken from these three tanks, and flow through individual Kates regulators to centrifugal pump which mixes them and sends them through reactor. Scales are used to check-weigh, but would not be necessary in a commercial installation. Even here, the calibrated regulators provide ample accuracy

Obviously, a commercial installation, although based on the same principle, would use a different cooling arrangement — a tube bundle, for instance.

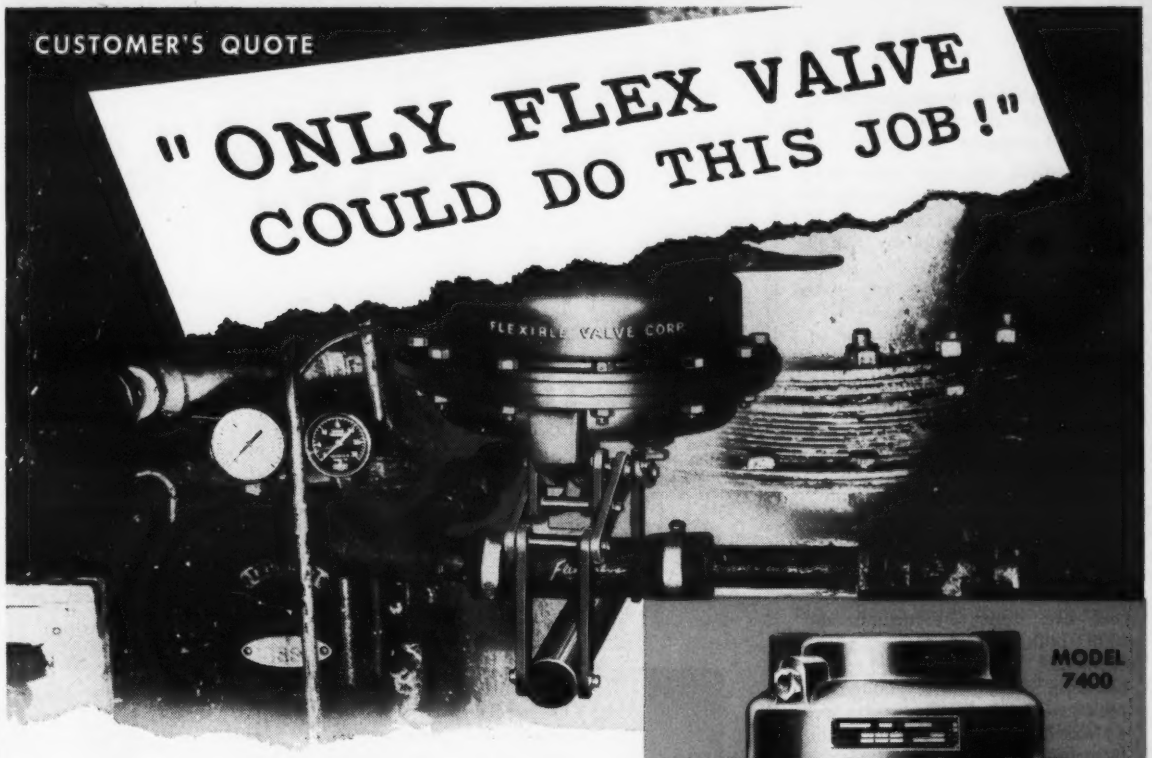
Rosin soap solution, styrene, and butadiene are fed from inert-gas-pressurized tanks, into a common line which leads to a high-speed centrifugal pump. This pump mixes the ingredients into an emulsion and sends it through a double-pipe heat exchanger which cools the emulsion. Then the emulsion goes through the pipe runs inside the brine bath, totaling about 250′ in length. Hydroperoxide activator and iron complex catalyst are added along the line by proportioning pumps.

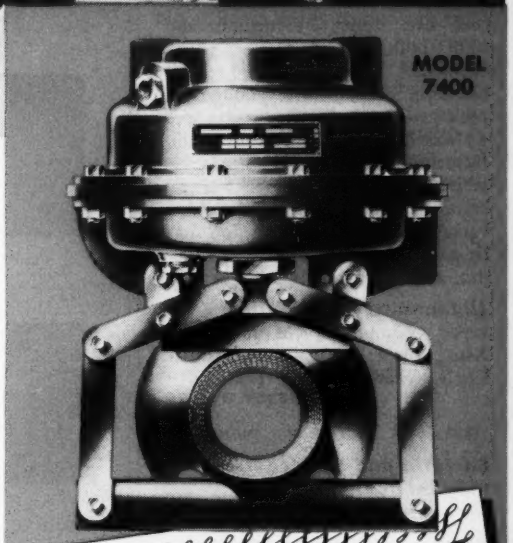
At the last pipe turn, shortstop is added by proportioning pump, and then the final emulsion is discharged through a back-pressure valve set at 40 psi. Product is collected in a receiving tank and is then coagulated and processed further.

(Information courtesy B. F. Goodrich Chemical Company, a division of The B. F. Goodrich Company, Department CP, Rose Building, Cleveland 15, Ohio.).

CUSTOMER'S QUOTE

"ONLY FLEX VALVE COULD DO THIS JOB!"





This diaphragm motor-operated Farris Flex Valve is handling a hard-to-convey, semi-solid slurry in a leading chemical processing plant. Before it was installed, other types of valves clogged after as little as a few hours' service. *Yet Flex Valve has performed perfectly for more than 3 years, in a 24-hour, 7-day-week operation.* Many other Flex Valve installations have been giving trouble-free, continuous service for 15 years or more. If you have a problem in controlling flow of any hard-to-handle fluid, send for Catalog No. FL 382. B

Exclusive FLEX VALVE Features (Pat'd & Pat. Pending)

- Will outwear any metal valve on abrasive service. Proven minimum 11 to 1 life over metal.
- Full pipe capacity.
- Will not freeze up in outdoor service.
- Excellent control characteristics in first ⅓ of travel.
- Complete closure for bubble-air tightness.
- Tight on grits up to ⅛".
- No obstructions, pockets, or internal parts.
- Valve body available in pure gum rubber, neoprene, butyl, buna-n, buna-s, food stock and special compounds.

We Guarantee
YOUR MONEY BACK
if Flex Valve plugs

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Affiliates: **Farris Engineering Corp. • Farris Stacon Corp. • Farris Hydroseal Corp. • Farris Hydrotorque Corp.**

When inquiring check CP 8311 on handy form, pgs. 2-3

Solving conveyor problems is topic of 'short course' on Illini campus

To acquaint conveyor users with latest engineering developments in this field and practical methods of solving conveyor problems, the U. of Illinois Dept. of Mechanical Engineering in cooperation with the Conveyor Equipment Mfg. Assn. will conduct a Conveyor Institute during Apr. 14-16 at the Illini Union Bldg., Champaign, Ill. Engineers, representing both manufacturers and users, will participate as panel members in practical question and answer sessions which will fill most of the three-day program.

Simultaneous sessions will be held for four types of conveyor users: 1) medium and bulk handling, i.e., coal, ore, stone; 2) medium and light bulk handling, i.e., grain, chemicals, wood chips; 3) unit handling of consumer goods, i.e., packages, cans, bottles, bags; and 4) unit handling of parts for manufacturing assembly. Engineers taking the "short course" will receive certificates from the University. Further information may be obtained from Mr. R. K. Newton, at the University address.

(Information received from Conveyor Equipment Manufacturers Assn., Dept. CP, No. 1 Thomas Circle, Washington 5, D.C.)

Bacteria and odor control may be next step in air conditioning

Absolute removal and destruction of bacteria and odor in occupied spaces such as industrial buildings, offices, homes, and theatres may be the next step in air conditioning.

Extensive research has already been undertaken on this phase of air conditioning. In fact, nine years of research on this problem has already developed important control principles.

Lack of knowledge of these principles, by preventing a common baseline of correlating knowledge, has handicapped progress to a considerable extent. No standard methods have existed by which the merits of air sanitizing agents can be factually evaluated.

Removal of bacteria and odor is to be desired, rather than the masking or neutralizing of odors or reduc-

How Mississippi Chemical

They did

Mississippi Chemical had a series of *over-all* electrical problems when they were planning this plant.

what

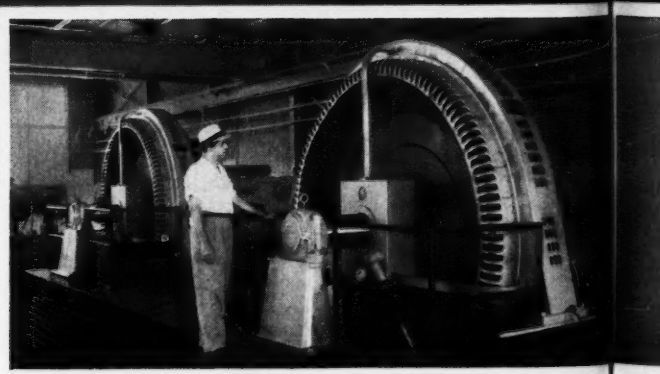
They had Girdler and Westinghouse Engineers *attack these problems as a whole.* Based on previous experience they put together a *co-ordinated electrical system.*

you can do

This experience and this over-all method can be applied to your next project, whatever it is. Westinghouse can work with you on *all* your electrical needs.

to produce more

The result will be more dependable production . . . lower costs . . . better operations. Whether you need one motor, or a complex electrical system, call in Westinghouse.



Ammonia Superintendent inspects the 900-hp hyper compressor in the ammonia compressor room. Driving this compressor and all the other drives in the plant are Westinghouse Motors. These motors have a lower installed cost . . . are easier to operate . . . and require less maintenance than other types of drives.

got the BEST power equipment . . .

at no EXTRA cost!

Mississippi Chemical Company recently built a new plant in Yazoo City, Mississippi. For the electrical engineering, Westinghouse and the Girdler Corp., the engineers and prime contractors, put their heads together. By careful planning they developed a power system that uses the best type of modern equipment *but at no extra cost.* They made savings that offset the higher price. Here's how they did it.

Dependable, Low-Cost Power. To make use of the low-cost power available from the Mississippi Power and Light Company, a complete Westinghouse Substation was installed. Included were two 6000/7500-kva transformers. This rating permits line-starting of the large compressor motors and eliminates the need for costly special controls. The best secondary voltage was determined to be 2400/4160Y-volts. This reduces the size of the copper wire . . . keeps line losses at a minimum . . . and can be easily handled by standard transformers.

Top Motor Performance and Protection. For the main compressor drive, they chose electric motors because they have a lower installed cost . . . are easier to operate . . . and require less maintenance than other drives. The motor control centers were installed throughout the plant in non-hazardous locations. They got the advantage of grouped control without using more expensive, explosion-proof equipment.

Emergency Power Assured. For insurance purposes, an immediate source of stand-by power was required. Neither a combustion engine nor a condensing turbine met the requirements of fast, easy operation. However, a Westinghouse Type E turbine did the trick. It could be started by one man . . . reach full operation in 20 seconds . . . and it costs 25 percent less than any other adequate unit.

Westinghouse Can Help You. The next time you plan to build or expand your plant, call in Westinghouse. You can get these same benefits . . . the results of accurate system planning and dependable Westinghouse equipment. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-94902

Shown here is a Westinghouse Power and Control Center which supplies the power for the motors in the ammonia plant. These power and control centers are installed throughout the plant in nonhazardous locations to take advantage of grouped control.

Westinghouse

ELECTRICAL EQUIPMENT FOR THE CHEMICAL INDUSTRY

ing the sensitivity of the olefactory sense. Basic techniques are in existence whereby control work can be conducted in an engineering manner.

Control of odors such as those resulting from burning tobacco or cooking is possible. Since concentrations of tobacco odor are uniform and measurable, deodorant effect of any chemical or mechanism can be quickly evaluated.

Dilution-threshold method provides a means for evaluating odor results in a practical plant. Odor loads, desirable odor levels, and odor removal efficiencies can be established by this procedure. In this way the requirements of a deodorant are clarified and means for meeting needs can be supplied.

No standard exists to measure bacterial air sanitation. However, inside and outside air are consistently different. By comparative measurement of the air both inside and outside, the degree of effectiveness of any mechanism for reducing bacterial levels can be determined.

(Courtesy of American Society of Heating and Ventilating Engineers, Dept. CP, 62 Worth St., New York 13, N. Y.)

Easy-to-erect buildings feature versatility

Economy, versatility and easy erection are features of line of factory-produced steel buildings. Applications for units include machine shops, warehouses, foundry buildings, and food canneries.

Buildings are available in 32, 40, 50, 60, and 70 ft widths; lengths available in multiples of 20 ft. Units are easily arranged for wider structures by combining two or more buildings. Any arrangement of windows and doors is possible — no limitation as to their number.

Bulletin describing factory-produced buildings is issued by Soule Steel Co., Dept. CP, 1750 Army St., San Francisco 24, Calif. When inquiring specify CP 8312 on form, pgs. 2-3.

For more information on product at left, specify CP 8313 . . . see information request blank between pages 2-3.

"MIGHTY MITE" SOLVES
CHEMICAL PUMP PROBLEMS

The Eco All-Chem Pump is the All-Teflon and stainless steel pump that handles 70 percent of corrosive chemical requirements in Lab., pilot plant and small volume pumping in production service.

Simplify selection; standardize on fewer types, models, sizes; minimize maintenance problems.

READ THE SPECS . . . SPECIFY AND TRY

- *Type Pump:* Positive displacement with two opposed axially oscillating impellers equivalent to duplex piston operation.
- *Volume:* ½ to 10 g.p.m. maximum at 1750 RPM (water).
- *Pressures:* to 70 psi.
- *Suction Lift:* Highest over widest temperature and viscosity range.
- *Corrosion Resistance:* Lowest corrosion rate due to internal flow pattern. Handles all chemicals that stainless steel No. 316 will handle.
- *Pump Operating Characteristics:* Linear delivery. No air entrainment. Non-foaming. Unequalled for safety in handling hazardous liquids such as nitric acid and hydrogen peroxide. Self-priming on non-volatile liquids.
- *Drive:* Applicable to direct motor drive at 1750 RPM, as well as to all other standard driving methods.

All-Chem PUMPS ECO

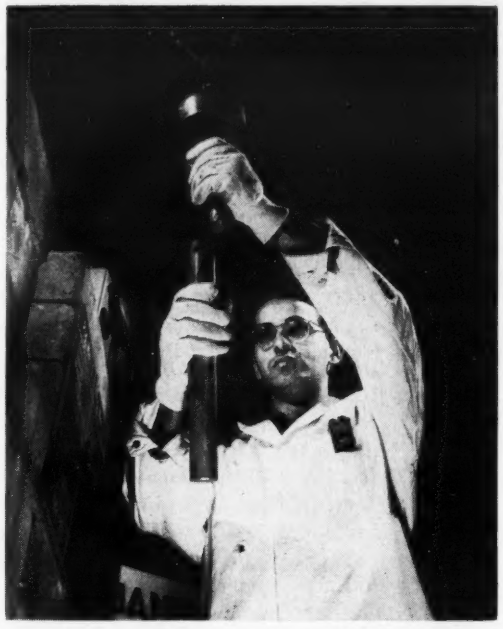
ENGINEERING COMPANY
12 New York Avenue • Newark 1 • New Jersey

When inquiring check CP 8314 on handy form, pgs. 2-3

Offer opportunity to industry to do own irradiating at AEC site . . .

technological improvements in service allow irradiation to be carried out at 0 to 200°F

In July 1951 Brookhaven National Laboratory announced the availability of 1000-curie sources of gamma radiation to assist industrial organizations in studying the application of radiation to industrial processes. Beginning with the first of this year, the BNL-irradiation service is being expanded to permit



Scientist is attaching aluminum canister to overhead lead plug. Canister contains samples to be irradiated

non-AEC organizations to send representatives to the site to perform their own irradiating. This is made possible by the shifting of irradiation facilities to an unclassified area of the laboratory. Advantage of this service is that it will permit technical personnel to become familiar with irradiating procedures and equipment and thereby gain first-hand knowledge for their companies.

In addition to this new facet of the irradiation service at Brookhaven, several technological improvements have been incorporated or are being planned. For example, temperature control has been designed into the "lead pigs" which house the radiation sources. This feature permits samples to be irradiated in the temperature range 0 to 200°F. Design work is continuing on a large volume irradiator with facilities for accurate control of temperature, humidity, and radiation field. Dimensions of the aluminum canister (see accompanying photo) which contains the samples to be irradiated have been 12 x 1⅜".

Tube size has been increased to 13½ x 1½" to permit the handling of larger samples. There will be a water pit in an unclassified area (the Hot Lab) where flexible experiments can be performed.

for PUMPING CHEMICAL SOLUTIONS!

NO LEAKAGE at STUFFING BOX

Fig. 19,488

VERTICAL DESIGN

Taber vertical pumps are specially built for handling chemical solutions, efficiently and economically . . . in the processing industries. Vertical design permits locating stuffing box above and out of liquid level. Therefore nothing to leak.

On business stationery, we suggest you write for:

BULLETIN V-837

TABER PUMP CO. Est. 1859
320 ELM ST., BUFFALO 3, N. Y.

When inquiring check CP 8315 on handy form, pgs. 2-3

Standard radiation sources at BNL are kilocurie cobalt-60 and tantalum-182. Several more intense cobalt and tantalum sources have been completed and will become part of the irradiation service.

Two experimental programs which have been in progress at BNL have been concerned with: kinetics of styrene polymerization under influence of gamma radiation, and cold sterilization of pharmaceuticals.

Purpose of the entire program is to determine the feasibility of use of by-products resulting from nuclear reactor operation. The kilocurie sources are

Shows "pig farm" containing the various cobalt and tantalum radiation sources. Plug and canister assembly have just been lowered by remote control pulley into source container

used to simulate the radiation of the by-products and to help the Atomic Energy Commission determine whether to make the fission wastes available in usable form.

(Samples in solid, liquid or gaseous form may be submitted for irradiation. Information regarding the service may be obtained from the Director's office, U. S. Atomic Energy Commission, Brookhaven National Laboratory, Upton, L. I., N. Y.)

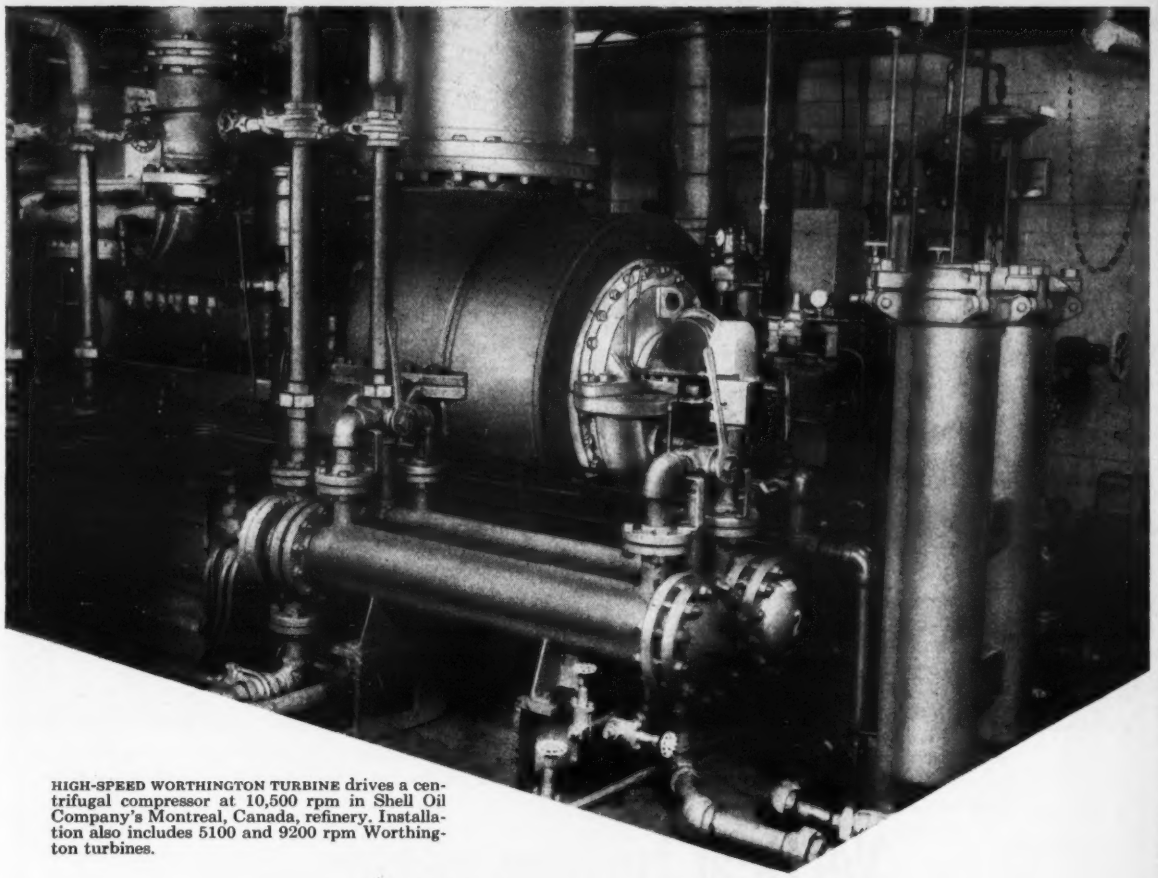
No additives used in process for making hardboard from sawmill waste . . .

non-debarked, run-of-mill slabs, trims and edgings are being fed to Oregon plant

Using *non-debarked*, run-of-mill slabs, trims, and edgings from its nearby sawmill, Oregon Lumber Company, at Dee, Ore., is making hardboard without the use of sizing, binders or other additives, except water. (Tempered type panels do, however, require addition of some synthetic resins during processing.) "Feed" to the year-old hardboard plant consists mostly of Douglas fir, with some white fir and hemlock too. But the process (the "All-board" Process) can also be used with Ponderosa and southern pine wood and bark, as well as plywood waste.

Plant has a daily capacity of 120,000 sq ft of ¼"

(*Continued on next page*)



HIGH-SPEED WORTHINGTON TURBINE drives a centrifugal compressor at 10,500 rpm in Shell Oil Company's Montreal, Canada, refinery. Installation also includes 5100 and 9200 rpm Worthington turbines.

10,500-rpm turbine is third Worthington Compressor Drive Turbine installed at Shell Oil's Montreal refinery

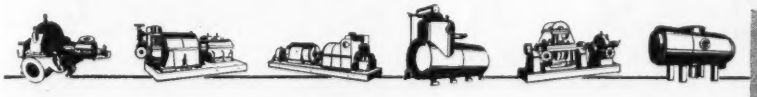
It was in 1950 that Shell Oil built its new big catalytic cracking unit in Montreal.

And it was three high-speed Worthington steam turbines they chose to drive the very vital blowers and compressors. The 10,500-rpm turbine, like the other two, is so free of vibration that after two years of operation its speed can barely be detected on a vibrating-reed tachometer.

Cat-cracker service requires continuous 24-hour-a-day operation so that reliability is of prime importance. Such operation is typical with Worthington centrifugal compressor and blower drive turbines. But it's not the only reason they're preferred in hundreds of plants outside as well as inside the U. S. A.

With a high-speed Worthington steam turbine you can forget costly speed-increasing gears. You easily set the exact speed needed with various types of control and governing arrangements designed specifically for your requirements. Steam consumption is at a minimum, maintenance requirements are simple.

Write for Bulletin 1966 entitled "High Speed Turbines for Your Centrifugal Compressor and Blower Drives." Worthington Corporation, Steam Turbine Division, Wellsville, New York. T.3.11



SINGLE-STAGE TURBINES · MULTI-STAGE TURBINES · TURBINE-GENERATOR SETS · FEED WATER HEATERS · BOILER FEED PUMPS · SURFACE CONDENSERS

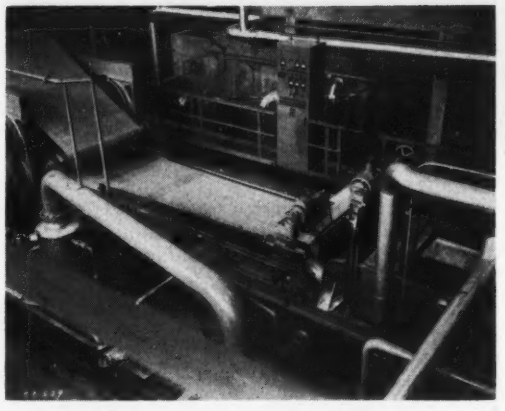
A GREAT TEAM IN STEAM

WORTHINGTON

Steam Turbines

When inquiring check CP 8316 on handy form, pgs. 2-3

(*Continued from preceding page*)



Board-forming machine and its control panel

or 180,000 sq ft of 1/8" hardboard. The finished product has a specific gravity of 1.04, a 6000-psi modulus of rupture, and good paintability.

The process can successfully utilize a wide range of bark percentages. Variation of bark percentage does not seem to affect hardboard quality or uniformity, as long as the percentage is kept within certain prescribed limits. About 20 to 30% less horsepower is needed for pulping a bark-wood mixture than for pulping straight wood chips.

Fiberizing and Refining

Cleaned slabs are chipped, and the 5/8 to 3/4" long chips are steamed and heated in the continuously fed preheater tubes of two modified Type D Asplunds. Pressure is 140 to 175 psig, and temperature 361 to 377°F, depending upon raw material quality and fiber quality desired. Chips' moisture content is increased by the steam and by addition of 5 gpm of water to each unit.

Chips are discharged from the tubes to the single-rotating-disc defibrator section of each Asplund, where they are converted to a mixture of coarse shives and fiber bundles. Release of the steam pressure blows the mixture to a cyclone, in which that by now the fiber is at 3% BD consistency.

Then comes refining in two single-rotating-disc refiners, one for each Asplund cyclone system. These reduce the coarse shives, and render the fiber more flexible and pliable so that it felts well.

The refined fiber goes to the first of three 40,000-gal stock chests. During fiberizing and refining, water (including white water) has been added, so that by now the fiber is at 3% BD consistency.

Forming and Pressing

Stock from the third chest (machine chest) is mixed with enough white water to reduce its consistency to 2%. The reduced stock is delivered to the headbox of a Downington fourdrinier board-forming machine. This unit has a capacity for running 180,000 sq ft of mat per day, and usually operates at 20 to 35 fpm. The same wire that carries the sheet through the forming section carries it through the

WORTHINGTON VERTICAL TURBINE PUMP installation at The Derby Oil Company refinery in Wichita, Kansas. The pump on the extreme left is driven by a Worthington steam turbine.

Vertical turbine pumps— the logical choice for cooling tower service

During installation of a new cat cracker, The Derby Oil Company revised their entire cooling system at their Wichita, Kansas, refinery and purchased a new three section cooling tower. As part of this system, eight Worthington vertical turbine pumps were installed. Here are some of the inherent characteristics of vertical turbine pumps that make these units the logical choice for this application:

1. Drive unit is remote and separate from the pumping element.

2. No need for priming or expensive dry pits because pump always operates submerged.

3. No suction problems.

Worthington gives you the newest, best-engineered vertical turbine pump available today. Find out more about these modern Worthington units. Contact your nearest Worthington district office, or write to Worthington Corporation, Vertical Turbine Pump Division, at Succasunna, New Jersey, or Denver, Colorado.

D.2.8

The World's Broadest Line Assures You The Right Pump For Every Job

WORTHINGTON

Vertical Turbine Pumps

CONSERVE GROUND WATER—IT IS A VALUABLE RESOURCE AND IS NOT UNLIMITED

When inquiring check CP 8317 on handy form, pgs. 2-3

Finished-board humidifier, discharge side. Boards rotate slowly, on end, within this unit. Tilt table drops them to horizontal position after they leave humidifier

press section. A top wire is employed in the press section, also.

In the forming machine, the stock is converted to a wet mat of 50% moisture content—1" thickness of mat will equal 1/8" thickness of finished hardboard. Behind the third press roll, a series of flat conveyor rolls receive the mat, taking it past two edging saws which cut down to a mat 4'3" wide. This mat is then cut to lengths of 16'3" by a traveling wet cut-off saw.

A Gruendler wet-pulp shredder receives edging trims and rejected wet lap. Water is added to bring consistency to 3% BD, and this stock is recycled to the No. 2 stock chest.

Cut mats are pressed in a 20-opening, 54 by 198" hot press, at temperature up to 410°F and pressures up to 750 psi. Pressing cycles run about 10 minutes for 1/8" panels and 15 minutes for 1/4" board.

Panels are then humidified to a 5 to 7% moisture content in a 48' diameter Industrial Air humidifier. The action is continuous. Each panel gets 3 to 4 hours of treatment in the moist air within the circular unit, which can hold 240 panels.

Humidified panels are trimmed and cut in two, to make two 8' panels from one 16' one. Trims are reduced to fines by special auxiliary saws, and are blown to the power plant for use as fuel.

Experience shows that 1000 sq ft of 1/4" hardboard requires 3/4 ton slabwood (bone dry basis), 2500 gal makeup water, 375 kwh electric power, 2500 lb process steam (275 psi), and 5 man-hours.

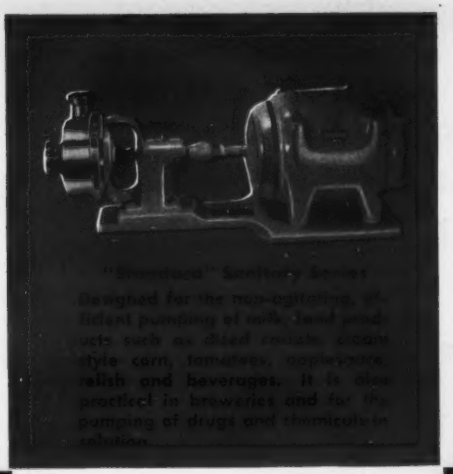
(The Allboard process is licensed by Blaw-Knox Construction Company, Chemical Plants Division, Dept. CP, 930 Duquesne Way, Pittsburgh 22, Pa. . . . or for more information check CP 8318 on handy form, pages 2 and 3.)

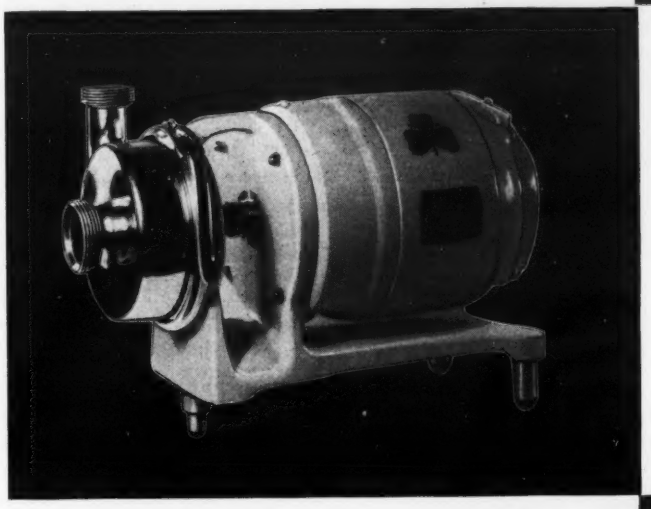
Bulletin describes services of engineering group

Services of an organization specializing in designing, engineering and building of special equipment, coordinated process controllers and panelboards are described in 4-page bulletin. Key men of the organization are pictured, and a list of industries where services can be utilized is given.

Bulletin is issued by Equipment & Controls Engineers, Inc., Dept. CP, Box 4446, Pittsburgh, Pa. When inquiring specify CP 8319 on pgs. 2-3.

You'll find all the features you want in TRI-CLOVER PUMPS





"Pump King" Unimount Series

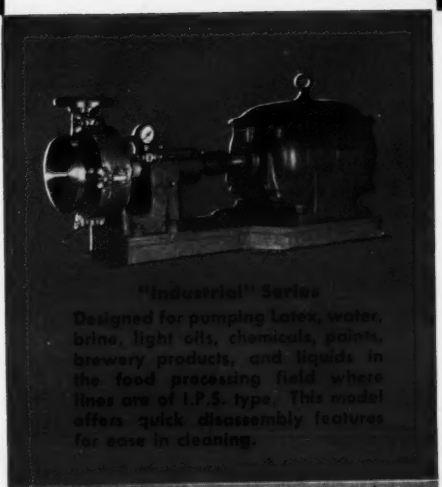
Designed for very efficient operation at 1800 and 3600 RPM, and especially where high speeds are required, through heaters, coolers, filters, clarifiers, etc. The 3600 RPM model is especially applicable in the dairy industry where high head and low capacity are essential and for handling low and medium viscosity liquids in the food processing industry.

OVER 30 years of continuous improvement is embodied in today's line of Tri-Clover centrifugal pumps.

The "Pump King" Sanitary Series—the Standard Sanitary Series—and the Industrial Series—all have exclusive Tri-Clover pump features that mean better, more efficient liquid transmission.

Patented screw type impeller with sanitary impeller clip—inert carbon seal that is easily removed and cleaned—streamlined, lightweight head with a minimum number of parts—simple, fast pump assembly and disassembly with the new Ring Clamp construction—these are just a few features that make Tri-Clover Centrifugal Pumps ideally suited for food, chemical, dairy, and industrial requirements for sanitary and corrosion-resistant service.

Benefit from these important advantages when looking for a solution to your pumping problems.



See your nearest Tri-Clover distributor, or write for a copy of Pump Catalog 250.

P-153

Tri-Clover MACHINE CO. Kenosha, Wisconsin

TRIALLOY AND STAINLESS STEEL SANITARY FITTINGS, VALVES, PUMPS, TUBING, SPECIALTIES

THE Complete LINE

FABRICATED STAINLESS STEEL INDUSTRIAL FITTINGS AND INDUSTRIAL PUMPS

When inquiring check CP 8320 on handy form, pgs. 2-3

Ideal Combination for "All-Chemical" Service

Now, manufacturers and users of all types of special chemical-resistant valves, pumps, processing equipment and piping are no longer limited by the shortcomings of vital sealing materials.

Chemiseal Packing, Gaskets, Expansion Joints, Flexible Couplings, Bearings, Bushings and other accessories—made of TEFLON*—are impervious to all chemicals except molten sodium and fluorine.

And United States Gasket Company engineering and fabricating experience has made the most of Teflon's outstanding mechanical properties—its resiliency, anti-hesion and anti-friction qualities—to adapt it to the operating requirements of all types of chemical equipment.

The "Tufclad"® chemical porcelain valve above for instance, made by the Lapp Insulator Co., Inc. of Le Roy, N.Y., utilizes a wedge-type Chemiseal Packing which effects a seal with extremely low gland pressure and friction load on spindle. This type packing is particularly suitable for ceramic valves, as well as glass-lined, Haveg, Karbate and valves made of similar materials.

Write for catalog. For valve packing, request 810 series. For pump packing, request 711 series. For emergency bulk and extruded stuffing-box packing, request 620 series.

*duPont Trademark

UNITED STATES GASKET COMPANY

FLUOROCARBON PRODUCTS DIVISION
CAMDEN 1, NEW JERSEY

Representatives in Principal Cities Throughout the World

When inquiring check CP 8321 on handy form, pgs. 2-3

Report progress for eliminating static in synthetics

Solving the problems of static electricity associated with the production of the new synthetic fibers such as Nylon, Orlon, Dacron, Dynel, Vinyon, etc, is the immediate objective of textile manufacturers. The ultimate goal, of course, is the attainment of a permanent anti-static finish to insure full consumer satisfaction with the new fibers.

Research undertaken on static has shown that many of the production problems formerly attributed to other causes were really due to build-up of electrical charges in spinning, weaving, slashing, or finishing of textiles. Currently under development is a device which will accurately measure static charges in textiles. The device is said to overcome the disadvantages of methods which measure the current at one end of a piece of fabric as compared with degree of intensity at the other end without revealing extent of static electricity.

Work is progressing to overcome static in apparel items. Anti-static rinses have been successful to a degree, but non-permanency has been the disadvantage. It is predicted that detergent manufacturers will soon incorporate anti-static agents in their products. Washing the synthetics periodically with these compounds will overcome the non-permanency. Treating the synthetics with surface active agents which form ions in solution is said to improve the conductivity of the fiber, and consequently helps control static.

(Highlights of an address before a recent AATCC meeting by Dr. Sidney M. Edelstein, Technical Director, Dexter Chemical Corporation, Dept. CP, Boulevard PO Box 1, New York 59, New York.)

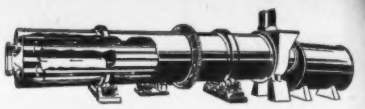
Temperature held to ± 2°C in individual sections of pipe reactor . . .

heat control system tests feasibility of changing from batch to continuous process

A continuous reaction apparatus capable of maintaining temperatures in separate zones of piping to ±2°C has been successfully constructed by pilot plant engineers at the Heyden Chemical Corp., Garfield, New Jersey.

Originally used to test practicality of converting batch operation to continuous flow process, the new method uses a series of thermostatically controlled separate systems for assuring even temperature of various pipe sections.

Process required reaction mixture be held at series of controlled temperatures (ranging from 30 to 90°C) for specific periods of time as mixture passed through reaction pipe. Pipe was made up of series of jacketed sections connected with pipe crosses and return bends, such as in a double-pipe heat exchanger. Temperature of each zone, consisting of one or more pipe reactor chambers coupled together,



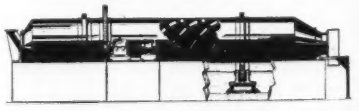
DOUBLE SHELL DRYERS

SINGLE SHELL DRYERS

Ruggles-Coles

CONTINUOUS ROTARY DRYERS, KILNS, AND COOLERS

ROTARY KILNS



ROTARY COOLERS

Ask for Bulletin 16-D-13 which describes the entire Ruggles-Coles line.

HARDINGE COMPANY, INCORPORATED

YORK, PENNSYLVANIA—240 Arch St. Main Office and Works

NEW YORK 17 • SAN FRANCISCO 11 • CHICAGO 6 • HIBBING, MINN. • TORONTO 1
122 E. 42nd St. 24 California St. 205 W. Wacker Dr. 2016 First Ave. 200 Bay St.

When inquiring check CP 8322 on handy form, pgs. 2-3

is regulated by temperature of water circulated through surrounding jackets. Number of units in single section depends on length of time desired to hold mixture at a given temperature.

Accompanying diagram illustrates arrangement for one temperature zone. Reactants are introduced into mixing chamber at a fixed temperature and constant rate by means of circulating pump. Mixture then moves into first temperature zone, end of which has

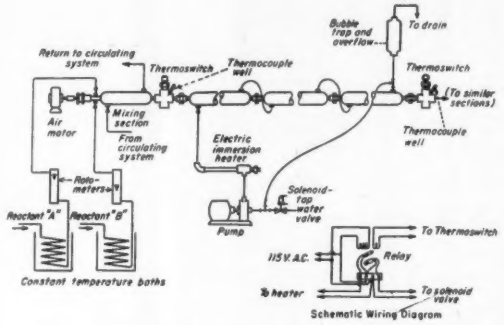


Diagram illustrates how temperature is controlled in one zone of continuous reaction apparatus

a Thermoswitch unit inserted into the pipe cross. Accompanying this thermostat is a thermocouple which feeds temperature data to an automatic recorder.

Thermostat operates SPDT relay, which controls both an immersion heater and solenoid-operated cold water valve. Thermostat is set to actuate at temperature required to keep reaction mixture at desired temperature of zone. When reaction temperature is too high, thermostat opens and allows cold water to enter system through valve. When temperature is too low, thermostat remains closed, causing heater to warm circulating water.

Similar arrangement is used to regulate constant temperature bath which cools reactants to 10°C. Inverse-type thermostat (closes on temperature rise), placed in water bath, controls small centrifugal pump which circulates dry-ice cooled methanol through bath. When temperature rises above 10°C, coolant is circulated; when temperature drops below desired level, pump is shut off.

Electrical contacts of thermostat are sealed inside unit and cannot be contaminated or shorted out by liquids or vapors. Compact size (less than 5/8" diameter) permits it to be easily threaded into pipe cross. One type thermostat was satisfactory for use throughout entire temperature range of system.

Any number of temperature zones can be constructed by using individual thermostatically-controlled circulating system for each zone. Pipe size should be kept to a minimum, compatible with flow rate required. In this way optimum heat transfer can be obtained between jacket water and reaction mixture.

(Thermoswitch unit is manufactured by Fenwal, Inc., Department CP, 218 Pleasant Street, Ashland, Massachusetts . . . or for more inforation about this development simply check CP 8323 on handy Reader Service slip between pages 2 and 3.)

EVAPORATION in SECONDS!

The unique Rodney Hunt Turba-Film Evaporator gives incredibly fast *one-pass* evaporation of liquids, slurries and gases . . . especially heat-sensitive substances . . . all by continuous process!

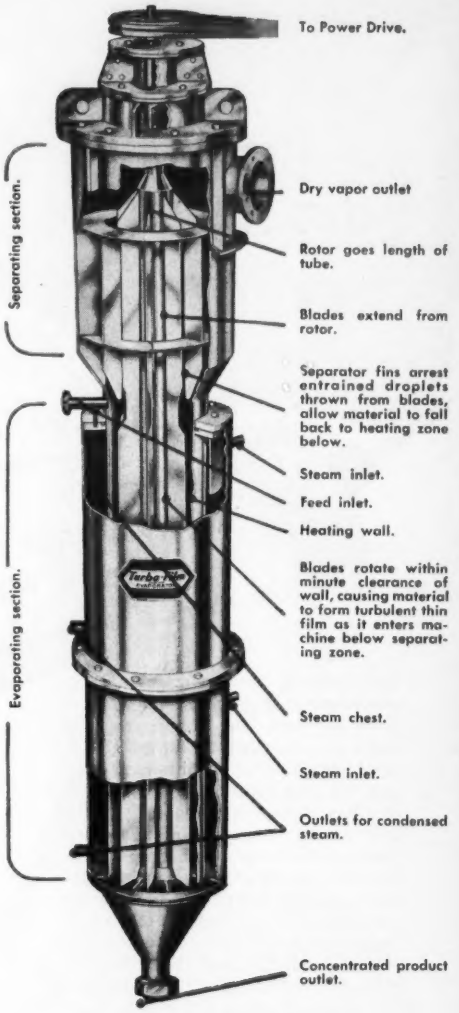
The Turba-Film Evaporator employs a totally different concept of evaporation. Makes heretofore extremely difficult evaporating processes simple and rapid. Actually evaporates most substances in a few seconds!

Here's how the patented Turba-Film® works. The substance to be evaporated is fed into the evaporating section. Here it is whirled against the wall by controlled-speed rotor blades. This forms a thin turbulent film, centrifugally held to the wall, which spins in a gravity flow through the chamber and out . . . completing the process. The vapors rise into the separating section where rotor blades beat out any entrained droplets and force them back through the evaporating section.

So thorough is this Turba-Film process that no substance requires re-circulation . . . the desired concentration is achieved in one pass! So fast is the Turba-Film action that proper heating is done in seconds. Colors, flavors, nutritional and other valuable properties are retained to a much higher degree . . . especially in heat-sensitive substances.

Because of its new principle, the Rodney Hunt Turba-Film Evaporator (Luwa Process, Switzerland) permits quick change-over from one product to another; prevents foaming and frothing difficulties; allows constant quality control to be maintained; permits concentration to very much higher viscosities and solids content than is practical with conventional equipment.

Please consider our complete engineering staff at your disposal for consultation on any possible Turba-Film application. We have the facilities for making test runs in our pilot plant: or we can provide a portable laboratory unit for use in your own plant. Mail this coupon for free color brochure explaining the Turba-Film Evaporator in detail.


To Power Drive.
Separating section.
Dry vapor outlet
Rotor goes length of tube.
Blades extend from rotor.
Separator fins arrest entrained droplets thrown from blades, allow material to fall back to heating zone below.
Steam inlet.
Feed inlet.
Heating wall.
Evaporating section.
Blades rotate within minute clearance of wall, causing material to form turbulent thin film as it enters machine below separating zone.
Steam chest.
Steam inlet.
Outlets for condensed steam.
Concentrated product outlet.

Models available in ranges from 40 to 2500 pounds of water evaporation per hour. Stainless steel construction.

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Manufacturing Engineers since 1840

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Process Equipment Division

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32 Vale Street, Orange, Mass.

Please send Free brochure giving details of Turba-Film Evaporator

Name.....Title.....

Company.....

Address.....

City.....Zone.....State.....

Type of Industry.....Product.....

☐ I want details on your testing program. CP3-53

When inquiring check CP 8324 on handy form, pgs. 2-3

All Metal THERMOMETERS

with WESTON dependability built-in

The heart of the modern, dial-type thermometer is the all-metal temperature element. Developed over 15 years ago, the WESTON all-metal element has plenty of proof behind it. In fact, the dependable accuracy of this unit has made the readable WESTON thermometer favorite for laboratory use as well as for all industrial temperature needs. For *extra* dependability, specify WESTON all-metal thermometers . . . available in the types, ranges and sizes indicated below. Literature available. WESTON Electrical Instrument Corporation, 614 Frelinghuysen Avenue, Newark 5, N. J.

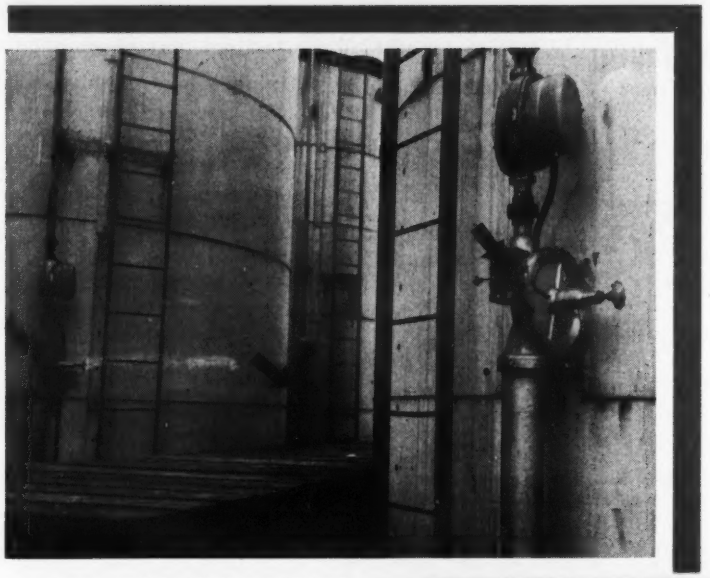
Type	Scale Length	Ranges		Stem Length		% Accuracy of Thermo. Range
		As low as	As high as	As short as	As long as	
Heavy Duty Straight Form	9"	−100F	+1000F	2½"	48"	1
Heavy Duty Angle Form	9 or 12"	−100F	+1000F	2½"	72"	1
Standard Angle Form	6"	−100F	+1000F	2½"	72"	1
General Purpose	4½"	−100F	+1000F	2½"	36"	1
Laboratory	3.40"	−100F	+500F	2"	24"	½ of 1

WESTON *Instruments*

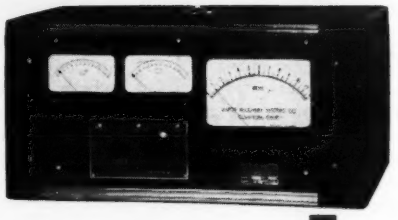
799

When inquiring check CP 8325 on handy form, pgs. 2-3

Instrumentation & control



Transmitter is installed on each tank and conveys liquid-level readings to receiver in foreman's office



By turning dial, foreman can determine level of paraffin in any tank

Electronic gaging indicates level of molten paraffin in distant tanks

Panelboard gives reading accurate to fractional inch, for any one of 5 tanks

NEW plant of the Central Waxed Paper Company, in Chicago, is using an electronic level gage for remote checking of stock-on-hand of paraffin. Tank cars bring the molten paraffin to five storage tanks located at siding. Wax is held in the liquid state and pumped as needed to outlets in the plant, where it is used in making various grades of waxed paper. Control point of this Varec system is a panelboard located in the foreman's office inside the plant. This indicator has three scales — one reading tank levels from 0 to 27 feet, another reading levels from 28 to 54 feet, and the third reading inches and fractions above reading on foot scale. Use of conversion chart then pinpoints tank's volume content. Only one "foot meter" will register when receiver is in operation, and it will respond to each

12" change on the inch-scale. Since only one foot and one inch reading show on receiver, possibility of human error is kept at minimum.

Transmitters located on the tanks are driven by perforated tapes connected directly to floats inside the tanks. Look boxes installed just below transmitters permit visual gaging at tank site. Within the transmitter the toothed-tape gage directly drives potentiometers contained on opposite side of explosion-proof partition. One potentiometer picks up one foot changes while second transmits inch variations to receiver.

Changes in liquid level of any tank drive potentiometers, whose variations are converted to direct readings in feet and inches at receiver located in foreman's office.

The remote gaging system employs an electronically regulated DC voltage to power both transmitter and receiver. If power source should ever fail, receivers do not go out of calibration. They will provide correct readings as soon as power returns.

Notable advantage of the system is that foreman knows instantly how much paraffin he has on hand, without sending a man out to the tanks to find out. This in turn provides information as to wax used in various processing periods, necessity of reordering wax, etc.

(Varec Electronic Gager is product of Vapor Recovery Systems Co., Dept. CP, Compton, Calif. . . . or for more information check CP 8326 on handy form, pages 2 and 3.)

To produce true measurement of mass-rate of flow in gases, liquids . . .

modified design may be used in metering flowing granular solids

Uses: Instrument will indicate true mass rate of flow of any material flowing or falling through it. Used with an integrater, it will read directly in pounds or other mass units.

Features: Unique feature of the mass meter is its insensitivity to volume, viscosity, density, temperature, or any other variable except mass rate.

Description: Designed to make a measurement of mass rate of flow by determining moment necessary to give the mass a Coriolis acceleration. As shown in cutaway, flowing stream is forced out radially through vanes by its own velocity. Since these vanes are rotating, paths of particles form spirals. Force is applied so as to obtain increased tangential velocity of particles as they move out through the

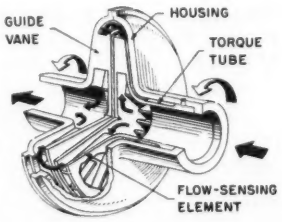


Figure 1

(Continued on next page)

An unbeatable team for temperature measurement

DYNALOG RECORDERS and DYNATHERM BULBS

You can't beat this Foxboro Dynalog-Dynatherm combination for insuring better temperature measurement on any job between–100° and+600°F. It gives you every advantage of speed, accuracy, long leads, simple installation, economy, and freedom from maintenance. This is why:

The Dynalog Electronic Recorder has an exclusive variable-capacitor measuring system which eliminates slidewires, gears, cables, high speed balancing motors . . . no dead space, no batteries to standardize, no motors to service. Standard full-scale pen speed only 3 seconds. Sustained accuracy ¼ of 1% guaranteed. Available for spans as narrow as 5°F. with full-accuracy calibration.

The Dynatherm Resistance Bulb has unique features including metal-to-metal end-contact which, when installed in a well or socket, gives a speed of response unsurpassed by any other similarly protected temperature-sensitive element. Exceptionally rugged and permanent in calibration.

for any range between -100° and +600°F.

These are only a few of the important advantages of this better temperature measuring system . . . available also for control of temperatures, or with Multi-Record Dynalog Recorder for up-to-6 records on one chart. Write for illustrated bulletins, The Foxboro Company, 813 Neponset Ave., Foxboro, Mass., U.S.A.

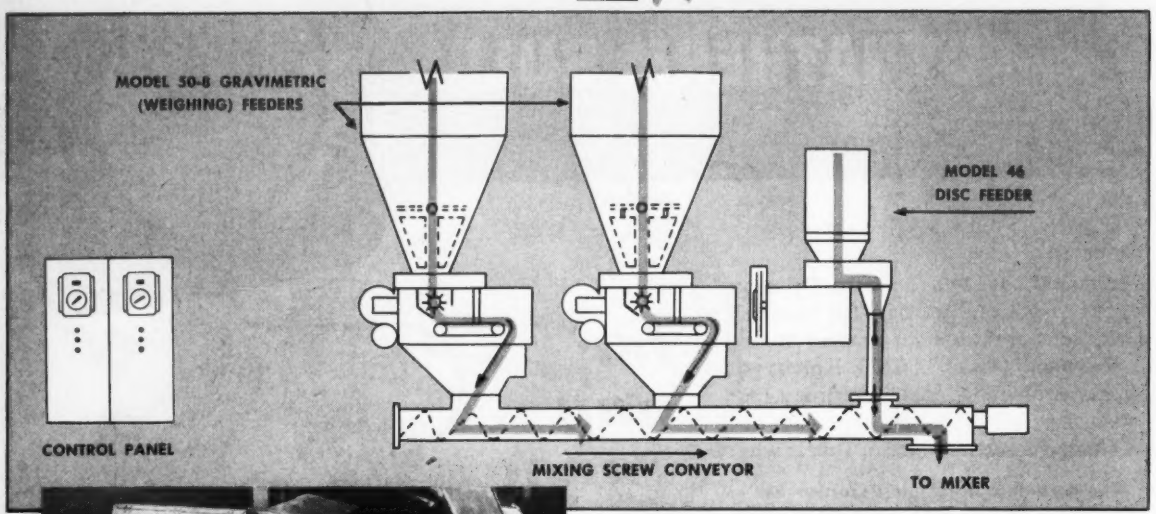
FOXBORO REG U S PAT OFF **INSTRUMENTATION**

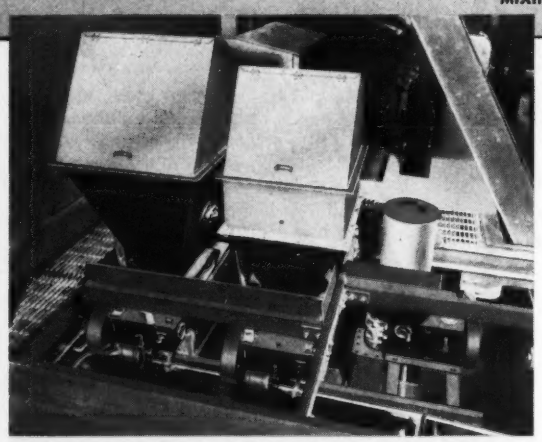
FACTORIES IN THE UNITED STATES, CANADA, AND ENGLAND

When inquiring check CP 8327 on handy form, pgs. 2-3

PROPORTIONING "EQUIPMENT PACKAGE" FOR THREE DRY INGREDIENTS . . . . . .

✓ Continuous
✓ Automatic
✓ Accurate





This compact 3-ingredient feeding and proportioning "equipment package" compounds plastic molding powder at Stokes Molded Products, Inc., Trenton, N. J. The installation consists of two Omega Model 50-8 Gravimetric Feeders for feeding materials such as resin and fillers and one Model 46 Disc Feeder for adding color to the mix. The output from this proportioning system is delivered directly into a mixer for final plasticization. Feeders incorporate agitators to prevent arching in the hoppers and non-flood rotors for finely pulverized, floodable materials. Remote control features are available with an Omega panel board. This Omega Equipment "Package" has contributed to increased production as well as reduced manufacturing and labor costs. Greater uniformity of finished product has also been gained.

Here's another of the many Omega Continuous Feeding and Proportioning "Packages" now working in processing industries. It's automatic — feeds three dry materials simultaneously in correct proportions directly into a screw conveyor. Guaranteed accuracy of the Gravimetric Feeders is within plus or minus 1% by weight over a 100 to 1 feed range.

Omega Equipment "Packages" are designed to individual processing requirements and specific plant layouts. Our engineers are ready to work with you to suggest the most efficient feeding and proportioning system for your needs.

✓ **SEND COUPON FOR ENGINEERING INFORMATION.**

OMEGA MACHINE COMPANY (Division of B-I-F Industries)
387 Harris Ave., Providence 1, Rhode Island.

☐ Send Application Memo 35-J1 describing 3-Ingredient Feeding and Blending System.

☐ Send Bulletins 35-G5 and 50-H16 describing Model 50-8 and Model 46 Feeders.

Name.....
Company.....
Street.....
City..... State.....

OMEGA
B-I-F INDUSTRIES — *The Last Word in Feeders* — OMEGA

When inquiring check CP 8328 on handy form, pgs. 2-3

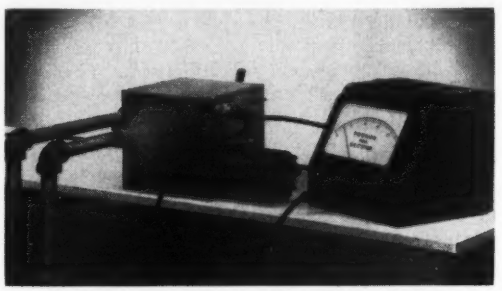
INSTRUMENTATION

(*Continued from preceding page*)

vanes. Actual measurement is the amount of twist in the torque tube (or the phase shift between sensing element and rotating case).

Vanes are driven by a synchronous motor at constant speed. Measurement of the torque is made by means of a strain-gage bridge mounted on torque tube. Signal is brought out through slip-rings to indicator. Calibration can be changed by simply changing the rotational speed of vanes. Accuracy of models tested to date indicates that 2% can be reached very easily, 0.2% can be attained with a well engineered design.

Direct reading measurements may be made in pounds per minute, or other units. So long as material will flow through the instrument, physical state, (gas, liquid, solid, or mixtures), has no effect on accuracy. Most important military and industrial needs will be filled first. Early application, for example, is expected to be fuel metering system for aircraft.



Early model of mass flowmeter is calibrated in pounds per second

At present, units are being custom designed for the job. Some models are already in operation, others are now in the design stage. Flow rates and sizes are going to be standardized in the near future.

(Mass Flowmeter is a development of Control Engineering Corp., Dept. CP, Norwood 104, Mass. . . . or for more information about this product, reader may simply check CP 8329 on handy form between pages 2 and 3.)

Simple, compact hygrometer carried to job or mounted in place . . .

flashlight batteries supply power for permanent indicating installations

Uses: Indicates relative humidity accurate to plus or minus 1%.

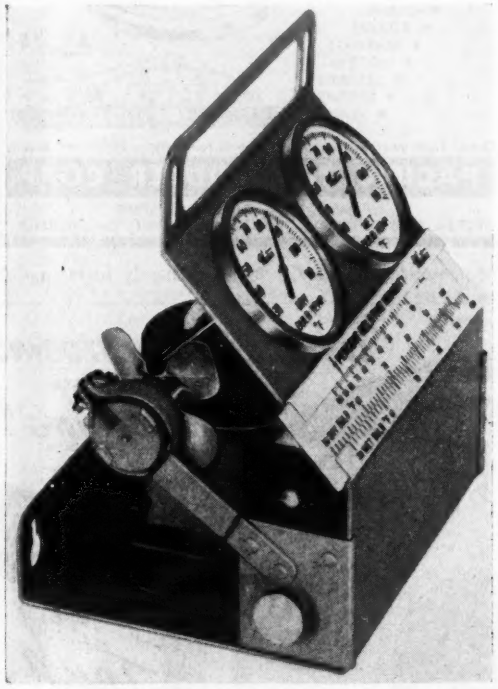
Features: Simple hygrometers, both manual and motor-driven, are small and easily portable. The instruments produce stable readings within one minute.

Description: Wet and dry bulb temperatures are read on circular scales of bimetal thermometers. Fast response of thermometers is responsible for fast overall response of instrument. Wick of

wet-bulb thermometer is supplied by a small jar of water conveniently located in the instrument. Slide rule type calculator reduces temperature readings to per cent relative humidity in a fraction of a minute.

Two models are available. Model 2201 is intended for use where operator swings the instrument manually by handle on top to bring temperature readings to equilibrium. It can be furnished to read from 10 to 100% relative humidity in a temperature range from 30 to 110°F, or from 20 to 100% humidity in a temperature range from 25 to 125°F. Thermometers are accurate to ±1°F or better.

Where continuous indication is needed, or where no room is available for swinging instrument to bring it to equilibrium, above instrument is modified by adding a tiny auxiliary fan. Model 9917 is identical with Model 2201 except that it also has this fan and provision for four standard flashlight batteries (D size) for power. Accurate readings are obtained within 30-60 seconds.

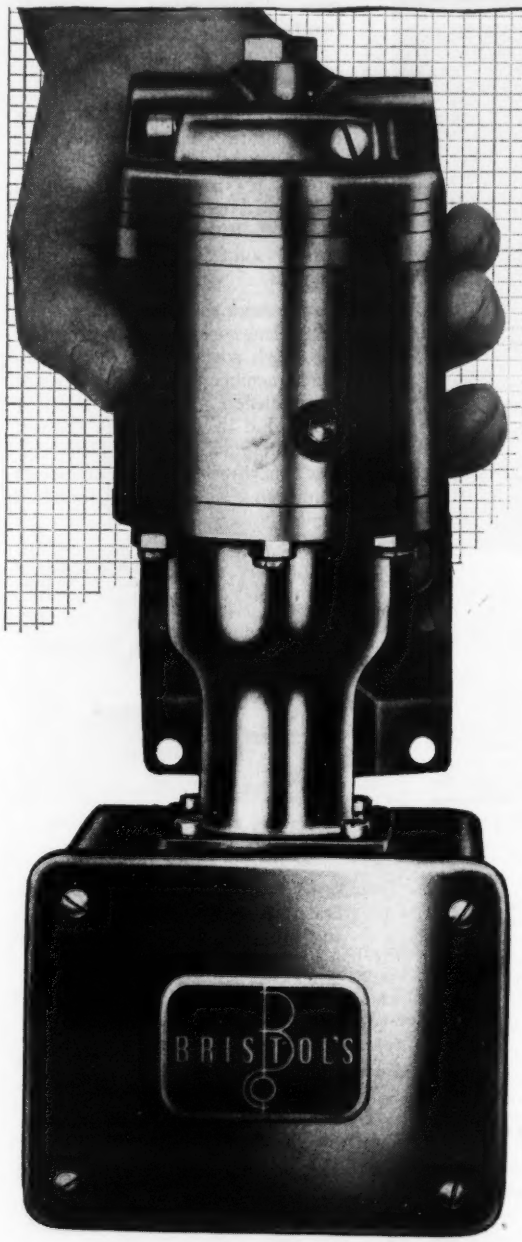


Left-end view of hygrometer shows fan. Batteries are located directly under slide rule type calculator

Motor, fan, switch and battery container are assembled as a unit which clips to the Model 2201. Model 9917 weighs approximately 1¼ lb or 2½ lb with fan and battery in place. Size is approximately 5 x 4¼ x 6⅛ inches.

(Relative humidity indicators have been developed by Weston Electrical Instrument Corp., Dept. CP, Newark 5, N. J. . . . or for more information check CP 8330 on handy Reader Service slip, pages 2 and 3.)

WHAT'S NEW AT BRISTOL . . . . WHAT'S NEW AT BRISTOL



New Bristol Series 650

PNEUMATIC TRANSMITTERS

for use with

BRISTOL MINIATURE RECORDERS, INDICATORS, AND CONTROLLERS

. . . give you these new advantages

● **THEY USE BRISTOL WORLD-FAMOUS MEASURING ELEMENTS—the measuring elements with wide-angle travel for positive action.** These are the same standard Bristol measuring elements that are used in Bristol Recording and Controlling Instruments. They are the result of over 60 years of experience in instrument making and application in practically every industry. Bristol measuring elements are recognized the world over for their accuracy, simplicity, and reliability. There are no better measuring elements made than Bristol measuring elements.

● **TRANSMITTING UNITS PROVEN TO BE ABSOLUTELY RELIABLE AND TROUBLE-FREE. They are very sensitive** to extremely small changes in the measured quantity, as little as 0.03% of range, including reversal. Superior control results from the use of a booster valve with output capacity of 3.0 scfm

● **SIMPLE TRANSMITTING MECHANISM—frictionless operation**—only one pivot and no flexures—will operate in any position—is weatherproof and can be installed in any location, pipe-saddle or surface mounting.

● **AVAILABLE IN A WIDE SELECTION OF RANGES:** Pressure (0 to 5" water to 0-10,000 psi), vacuum (0 to 5" water to full vacuum), temperature (—100° F. to 1000° F.), liquid level (0 to 5" water and up), flow (mercury manometer, bell type, and Barton meter bodies), and differential pressure (0 to 2.0" water to 0-500" water). Suppressed ranges available. Over-range is standard, up to 500% for some ranges. Write for free bulletin No. A105. The Bristol Company, 141 Bristol Rd., Waterbury 20, Connecticut. 6.3.8.

LOOK FOR OUTSTANDING NEW DEVELOPMENTS FROM BRISTOL

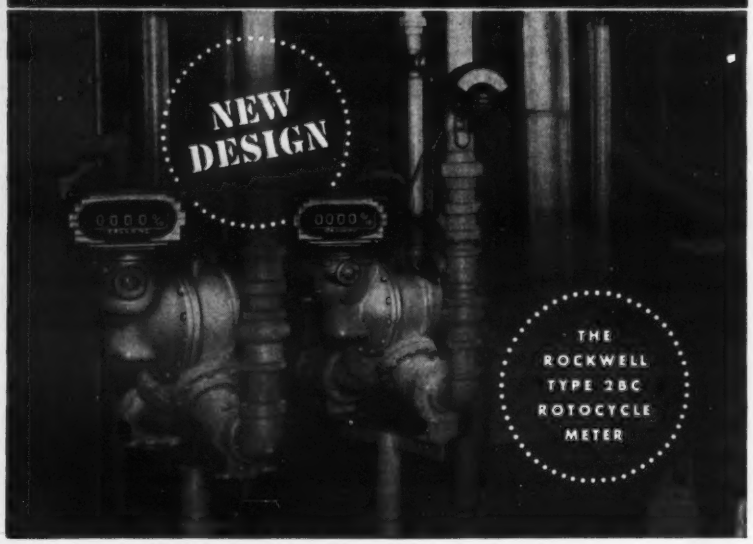
BRISTOL

THE DEPENDABLE GUIDEPOST OF INDUSTRY

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

When inquiring check CP 8331 on handy form, pgs. 2-3

NOW AN ALL-STAINLESS STEEL METER



Solves the Problem of Measuring Corrosive Liquids

Here's a meter specifically designed for accuracy and long life when measuring corrosive liquids common to the chemical, petro-chemical, food, pharmaceutical and industrial processing fields.

Constructed *inside and out* of stainless steel this meter is designed to operate under a maximum working pressure of 125 psi, and has a maximum capacity of 100 gpm.—20 gpm minimum.

The Rockwell Type 2BC Rotocycle meter provides accurate records of liquids handled which are so important to quality control when blending and batching—to inventory controls—to accounting and tax analyses.

QUANTITY CONTROL REGISTER

As an added convenience this meter can be equipped with a Quantity Control Register having a built-in electric switch to control relays, solenoids, pumps, valves, etc. The switch is actuated after a predetermined volume of liquid has been measured.

REMOTE REGISTRATION

The Rockwell Remote Registration Unit can be provided to transfer the reading of the 2BC meter by electric impulses direct to a central control room remotely located from the point where actual measurement takes place.

Write for bulletin OG-403

You Can RELY ON ROCKWELL

INDUSTRIAL METERS

CLIP COUPON—MAIL TODAY

A-5310R

ROCKWELL MANUFACTURING COMPANY
Pittsburgh 8, Pa.

Gentlemen:

I am interested in measuring _____ (Name of Liquid)
with your 2BC Stainless Steel Meter.

Pipe Size _____" Working Pressure _____ psi Temperature _____ °F max.
Max. Flow Rate _____ gpm Min. Flow Rate _____ gpm

YOUR NAME _____
COMPANY _____
STREET _____
CITY _____ ZONE _____ STATE _____

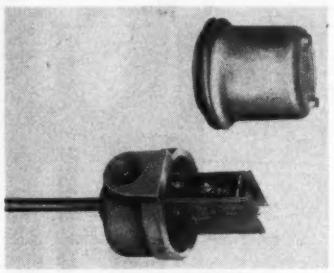
When inquiring check CP 8332 on handy form, pgs. 2-3

Differential expansion powers controller for temp . . .

switches 15 amp at set points between –300 and 300°F

Small controller is suitable for ovens, heating, air conditioning, or other general controlling duty in the range from –300 to 300°F. Differential expansion of two metals drives Microswitch rated by UL for 15 amp service at standard voltages.

Temperature sensing element of controller consists of outer tube with high coefficient of expansion. Inner member has lower coefficient of expansion. Relative motion of these, due to temperature change, is multiplied by lever which actuates Microswitch. Temperature set point can be changed by adjusting



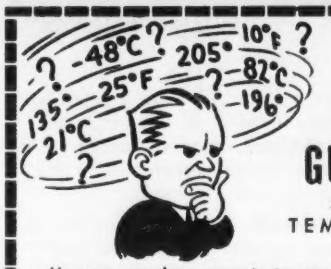
Housing removed showing switch-end of sensing element

screw and fine-adjustment dial. Standard units can maintain operating differential of ±½°F in most installations.

Tubes for sensing element are made in 5, 10, and 15-inch lengths. Ten inch length is recommended for most applications. Operating differential is governed to some extent by tube length — longer tubes being more accurate. Standard tube diameters are ⅜ and ½ inch OD. Waterproof housing of cast aluminum with gasketed joints is provided for connection to ½ inch IPS conduit.

Switches are rated at 125, 250, and 460 volts, 60 cycles AC. Three switch actions are available: normally closed (opens on temp rise); normally open (closes on temp rise); SPDT.

(Differential Expansion Controller is manufactured by Burling Instrument Co., Dept. CP, 5 Vose Ave., South Orange, N. J. . . . or for more information check CP 8333 on handy form, pages 2 and 3.)

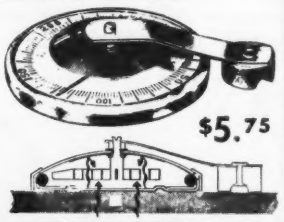


STOP GUESSING
SURFACE TEMPERATURES

Now you can have accurate temperature readings on the surface of any solid material or piece of equipment.*
* Surface, as opposed to ambient external or internal temperatures. Magnet and silicone grease supplied to affix thermometer to any surface.

PANDUX
SURFACE TEMPERATURE THERMOMETER

- FOR CHECKING:
- PIPES OR DUCTS
- DIES OR MOLDS
- FREEZERS
- OVENS
- BOILERS
- BEARINGS
- MOTORS
- CEILINGS
- FLOORS
- WALLS



$5.75

Order from your dealer today or send for Bulletin 206C3 for details

PACIFIC TRANSDUCER CORP.
INDUSTRIAL DIVISION CP353
11921 WEST PICO — LOS ANGELES 64, CALIFORNIA

When inquiring check CP 8334 on handy form, pgs. 2-3

"LIQUIDS WORTH STORING ARE WORTH MEASURING" with a

LIQUIDOMETER Tank Gauge

- FOR GAUGING LIQUIDS OF ALL KINDS
- 100% AUTOMATIC
- APPROVED BY UNDERWRITERS' LABORATORIES

WRITE FOR COMPLETE DETAILS

THE LIQUIDOMETER CORP
38-18 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

When inquiring check CP 8335 on handy form, pgs. 2-3

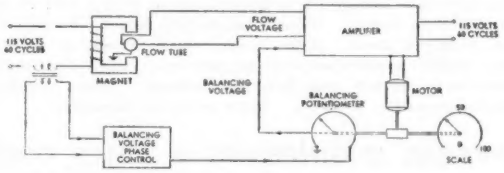
Unique possibilities offered for problem measurements of fluid flow . . .

electromagnetic approach uses no obstructions in pipe, gives accurate, linear readings

Uses: Flowmeter will measure rate of flow for any liquid having a specific inductance greater than or equal to that of tap water.

Features: Accuracy is within plus or minus one per cent of full scale and is not affected by changes in liquid viscosity, density, turbulence, or temperature.

Description: Readings are based on simple principle that a conductor moving through a magnetic field generates a voltage. If a flowing fluid conducts electricity (and tap water does it well enough for this purpose), pipe can be passed through a



This system measures flows from less than 50 cc/min to more than 20 gpm

strong magnetic field and the voltage sensed by electrodes imbedded in pipe walls. Alternating magnetic field is provided by an electromagnet built into the unit.

Voltage induced is proportional to linear velocity of stream. This results in a linear flow-rate scale which can be shown on indicators or recorders located remotely from the detector unit. Normally, 40 feet of cable can be used, but greater length may be employed where required.

Flow sensing element is a short length of tubing made of soft glass or non-magnetic material lined with insulation. A pair of metallic electrodes extend through walls of the tube from opposite sides. There is no restriction or obstruction in the tube. Flow-induced voltage is fed to null-balance instrument.

To supply the strong magnetic field, current is taken directly from a standard 115 v 60 cps line. Since power for recording or indicating instrument is taken from same line (through a transformer — see diagram) accuracy and calibration are independent of line voltage variations.

Full-scale flow range of standard units runs from 50 cc per minute to 20 gpm. Higher ranges can be provided. Typical accuracy in low range is ±0.5 cc per minute. Low range has been used in laboratory semi-works, pilot plants, as well as others.

(Flowtron electromagnetic flowmeter is a development of Vitro Corporation of America, Dept CP, 233 Broadway, New York 7, N. Y. . . . or for more information about this development reader may simply check CP 8336 on handy Reader Service slip between pages 2 and 3.)

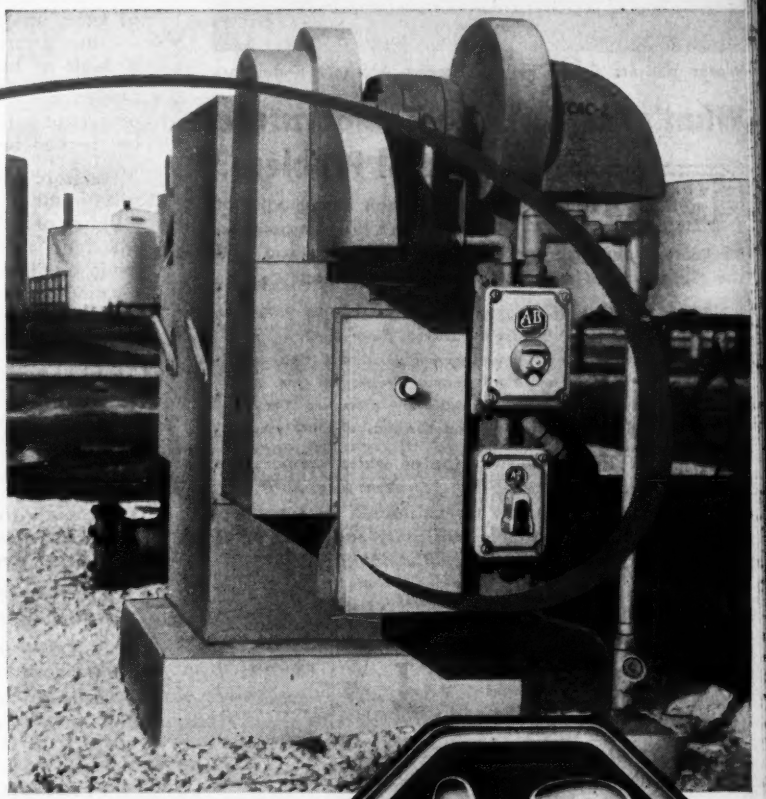
In moist or wet surroundings . . . it pays to install trouble free

ALLEN-BRADLEY MOTOR STARTERS

In outdoor installation, protect man, motor, and equipment with NEMA 4 Enclosures.

Bulletin 709 Solenoid Starter

Bulletin 609 Manual Starter



A-B controls on dryer at tank farm, Cit-Con Oil Corp., Louisiana.

● It pays out . . . in safer operation, in greater production, fewer shutdowns, and in lower maintenance . . . to use the correct enclosure for each motor starter.

Wherever conditions are moist or wet . . . it pays to install Allen-Bradley starters in watertight enclosures. Allen-Bradley starters are so dependable and trouble free . . . good for millions of operations. Furthermore, double break, silver alloy contacts require no maintenance. These are important assets in starters used in bolted enclosures. The safe Allen-Bradley NEMA Type 4 enclosure fully protects men, motors, and machines in damp atmospheres and wet surroundings.

Allen-Bradley Co.
104 W. Greenfield Ave., Milwaukee 4, Wis.

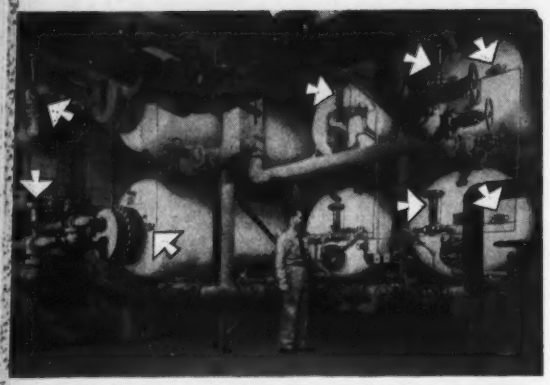
ALLEN-BRADLEY

SOLENOID MOTOR CONTROL

A-B Quality

The Sign of Quality in Motor Control

When inquiring check CP 8337 on handy form, pgs. 2-3



Water Heaters Controlled by Powers Accritem Regulators

What's Your Water Temperature Control Problem?

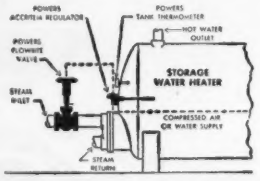
POWERS ... with their many types of thermostatic regulators and 60 years experience is well qualified to help you find the right type of control for these applications:

Forced Hot Water Heating Systems; various types of Water Heaters and Heat Exchangers; Jacket Water Cooling for Air Compressors, Diesel and Gas Engines also Cyclotrons, Chocolate Enrobers and Plastic forming Presses; all types of Shower Baths and Hospital Hydrotherapy; processing X-Ray, Regular and Colored Film — and hundreds of other uses.

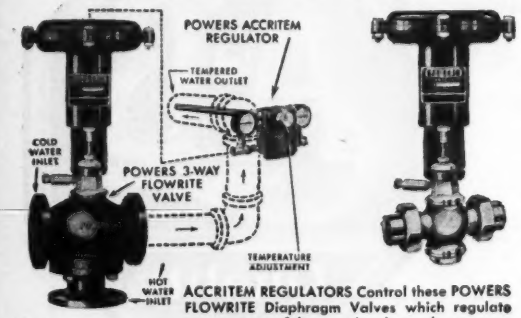
Only one of Powers varied line of water temperature controls is shown here ... the *Accritem Regulator*. It's compressed air operated, has calibrated dial temperature adjustment, adjustable sensitivity and many other features described in *Condensed Catalog 3035*.

Compressed Air Operated

Only one of many applications Small Size. Bulb is 12" long



Powers Accritem Regulators Give Years Of Dependable Service



ACCRITEM REGULATORS Control these POWERS FLOWRITE Diaphragm Valves which regulate temperature of heaters in photo above.

(a92)

THE POWERS REGULATOR COMPANY
Skokie, Ill. • Offices in Over 50 Cities, see your phone book.
OVER 60 YEARS OF WATER TEMPERATURE CONTROL

When inquiring check CP 8338 on handy form, pgs. 2-3

Need no calibration check to use flowmeters in lab . . .

set of five small variable-area meters spans flows from 0.075 to 805 cc/min

Set of five accurately calibrated variable-area flowmeters spans range from 0.075 to 805 cubic centimeters per minute of water or 50 to 34,500 cubic centimeters of air. Designated Tri-Flat, tubes have three flats which project inward to confine float closely despite its vertical position. Cross-section of tube shows a triangular shaped flow channel with float centered. At large end of tube, apices are farther from center of tube — thus greater flow area is provided when float is high in tube.

Design keeps float stable and prevents wobbling or erratic conditions. Thus calibration need not be checked before use. Readings are repeatable.

Meters are provided with standard taper ground glass joints, female at outlet, male at inlet. Either all-glass or rubber hose connections can be made. Matching, spherical, constant-density floats are made of glass or sapphire. Kit is provided with plastic carrying case. Five scales overlap conveniently to provide 10 to 1 flow ranges covering span noted above.

(Tri-Flat metering kit is a product of Fisher & Porter Co., Dept CP, Hatboro, Pa. . . . or for more information check CP 8339 on handy form, pages 2 and 3.)

Frostless valve works at rock-bottom temp and 98% RH . . .

thermal block construction prevents heat from escaping coil, keeps coil dry

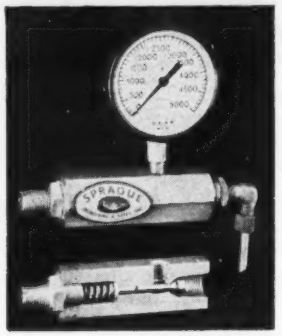
Redesigned solenoid valves are now being equipped with a thermal block to prevent absorption of coil heat by cold valve body. On cold water, and especially refrigeration service, these valves tend to prevent condensate from forming in coil chamber. Thus shorting of coil by moisture is eliminated.

Two solenoid valves are shown in the suction line of a Freon 12 refrigeration system. They are similar except that one is equipped with thermal block or insulation.

In this application refrigeration system was adjusted to frost back to the compressor and relative humidity was retained at about 98%. After a layer of frost had first started to form on the valve bodies, careful examination of both valves was made. Coil housing of the insulated valve remained warm to the touch. Other valve was noticeably colder and examination within the casing showed that moisture was forming on lower coil washer. No moisture could be found in insulated coil.

Frost was permitted to build up for several days before second examination was made. At this time insulated valve was still warm to the touch, no frost had formed to within ¼ inch of the coil

PROTECT YOUR GAGES!



New Shut Off Valve automatically cuts out gage from system when hydraulic or pneumatic pressure goes beyond its operating limit. Automatically opens when pressure is again within operating range of gage. (Cut-in point approx. 80% of set cut-out point.) Available for low pressures—30, 60, 100, 200 and 300 PSI. and high pressures—500, 1000, 1500, 2000, 2500, 3000 and 5000 PSI. Sprague Gage Shut Offs installed in a hydraulic system with multiple gages of various ranges, save valuable man hours. They eliminate the necessity of the operator opening and closing manually operated shut off valves for the various gages in the system. Supplied with standard pipe thread connections but can also be furnished with AN adaptors for aircraft fittings. Connection to the system is made at the end of shut off, ½" pipe thread. Connection to gage is made on the side of shut off, ¼" pipe thread. Overall length 5½ inches. Body is 1½ inch hexagon stock. Other models with bronze or stainless steel bodies available for water service. Finest construction. Individually tested and fully guaranteed. When ordering, specify capacities desired. Write today for bulletin.

SPRAGUE ENGINEERING & SALES CORP.
1144 West 135th St., Gardena, Calif.
Designers and Manufacturers of Precision Aircraft and Industrial Test Equipment.

When inquiring check CP 8340 on handy form, pgs. 2-3

Work with agar? ink? molten glass?

TEST • STUDY • CONTROL
VISCOSITY
As Simply, Quickly and Easily as Taking Temperature Readings

WITH A *Brookfield*
SYNCHRO-LECTRIC
VISCOMETER

Adaptable to any problem from less than one to 32,000,000 centipoises. Send for illustrated catalog.

Just a flick of a switch, then read the Brookfield dial, and you have your viscosity determination in centipoises. The whole operation, including cleaning up, *takes only a minute or two.*

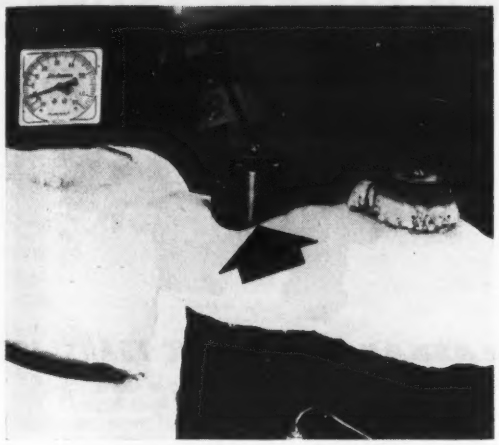
Available in a variety of models suitable for extremely accurate work with both Newtonian and non-Newtonian materials, Brookfield Viscometers are portable and plug in any A.C. outlet. *Write today.*

User in Cleveland, Ohio, reports: "Because of its portability, wide range of application, and ease of cleaning, our Brookfield Viscometer has saved us many times its cost in controlling the quality of our products."

Write Dept. A., Stoughton, Mass.

BROOKFIELD ENGINEERING LABORATORIES, INC.

When inquiring check CP 8341 on handy form, pgs. 2-3



Which valve has the thermal block?

housing. Conventional valve was markedly colder and completely covered with frost.

(Insulated solenoid valves are designated Types 60 and 65. Both conventional and insulated valves were products of Marsh Instrument Co., Dept. CP, Skokie, Illinois . . . or for more information check CP 8342 on handy Reader Service slip, pages 2 and 3.)

Monitors any flowing fluid for recording, totaling, or control . . .

can be used with almost any flow element from Venturis to open nozzles and flumes

Uses: Instrument totalizes, indicates, or records flow of liquids, steam, air or gas through almost any type of flow element. It can be used with Venturi Tubes, nozzles (including Kennison open nozzles), orifices, flumes, and weirs.

Features: Totalizing model with transmitter attachment can actuate a secondary instrument or "pace" a chemical feeder or feeders in remote locations.

Description: Flo-Watch instrument measures flow by differential pressure produced by any standard flow element. It can be electrically connected to a secondary instrument — is usually connected to a companion summation unit located remotely. Model AFUAQ Flo-Watch is designed to take advantage of economies arising from its comparatively narrow flow range. Totalizer reads directly in quantity units such as gallons or cubic feet.

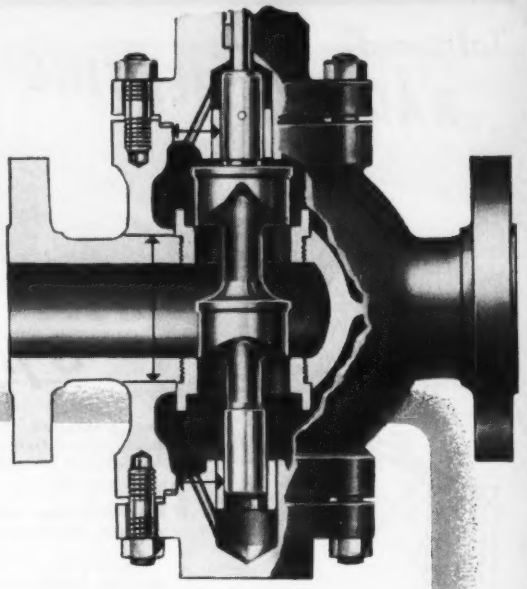
Indicator scale and chart graduations are arranged to provide good readability from 25 to 100% of full scale.

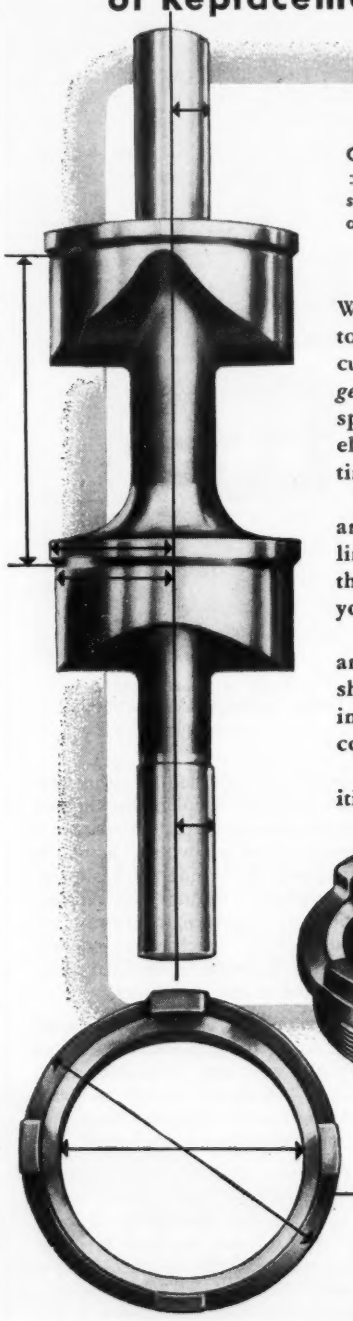
(Model AFUAQ Flo-Watch is a recent addition to the Flo-Watch line. Manufacturer is Builders-Providence, Inc., Dept CP, 345 Harris Ave., Providence, R. I. . . . or for more information about this product check CP 8343 on handy form, pages 2 and 3.)

In Masoneilan Control Valves the PLUS Quality Factor is

Precise Uniformity

of Replacement Parts





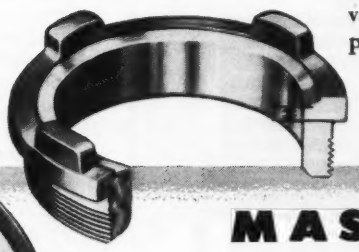
Concentricity maintained within ±.0005″ at points indicated insures accurate fit and perfect alignment.

When you buy parts for replacement you have a right to expect to be able to install them without recourse to a machine shop for custom fitting. And when you use Masoneilan Control Valves you *get* parts that fit. For Mason-Neilan precision methods, using specially designed tools and gauges, plus rigorous inspection eliminate this maintenance man's headache and reduce costly time out of service.

Note the points where precise uniformity means accurate fit and alignment. By maintaining concentricity within very narrow limits at these points Mason-Neilan makes certain not only that the valve you buy will be in perfect alignment but that any parts you may install later will also be in perfect alignment.

This uniformity is checked during processing and assembly — and replacement parts are rechecked in master bodies before shipment. Moreover, these parts are covered with a plastic coating to insure that the finish will be protected from damage and corrosion during shipment or storage.

This PLUS quality factor, added to the other outstanding qualities of Masoneilan Control Valves, offers you valves that *cost* less — and *cost* not *price* is the valid comparison among similarly priced valves.



MASONEILAN

MASON-NEILAN

REGULATOR CO.

1203 ADAMS STREET, BOSTON 24, MASS., U. S. A.

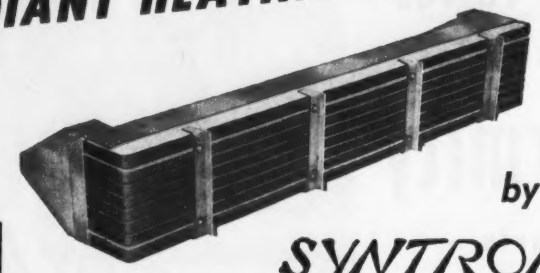
A HIGH Quality Coefficient PRODUCT

Sales Offices or Distributors in the Following Cities: New York • Syracuse • Chicago • St. Louis • Tulsa Philadelphia • Houston • Pittsburgh • Atlanta • Cleveland • Cincinnati • Detroit • San Francisco • Boise Louisville • Salt Lake City • El Paso • Albuquerque • Charlotte • Los Angeles • Corpus Christi • Denver Appleton • Birmingham • New Orleans • Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

When inquiring check CP 8344 on handy form, pgs. 2-3

"Infra-red"

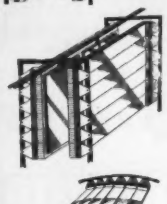
RADIANT HEATING PANELS



by

SYNTRON

Baking large objects



Arranged for side heating

Oven for flat surfaces

Cut production time and costs on baking, heating, or drying processes. Light weight — compact — easy to install.

Thin, strip type element design insures a flat, uniform, continuous heating pattern.

Syntron Panels heat by direct radiation — not by reflection. They permit closer application to the work — Less power consumption — operate on any commercial a-c or d-c frequency.

Write for free catalogue information.

SYNTRON COMPANY
210 Lexington Avenue — Homer City, Penna.

When inquiring check CP 8345 on handy form, pgs. 2-3

Dry Your Process Materials More Uniformly—Faster

in

GEHNRICH

Recirculating

OVENS

Gas • Steam
Electric • Oil

—

Batch or Conveyor Types

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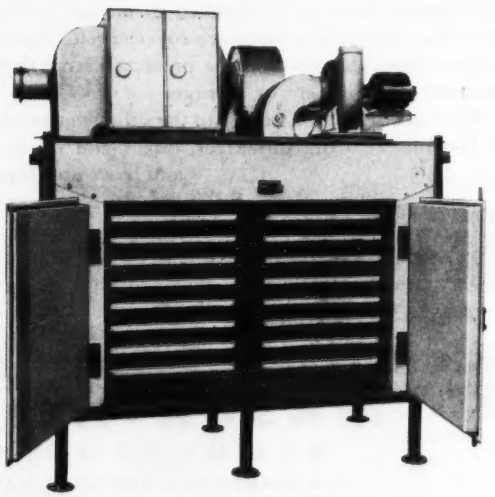


Steam Heated Tray Oven

W. S. ROCKWELL COMPANY
2203 Eliot Street • Fairfield, Conn.

When inquiring check CP 8346 on handy form, pgs. 2-3

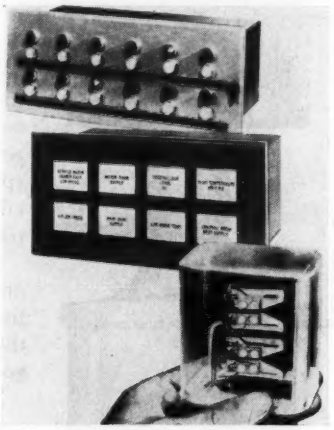
INSTRUMENTATION

Annunciator system collects signals all over plant . . .

makes any "off-normal" condition apparent at one point

Complete interchangability of circuits and functions is an important feature of this plug-in annunciator system. A single Panalarm unit can provide 3 to 54 individual signals and can collect information about any "off-normal" condition throughout a plant. Plug-in units are hermetically sealed and can be used in any Class 1 Division 2 location.

Systems provide both an audible and visual alert signal that must be acknowledged by operator. Visual



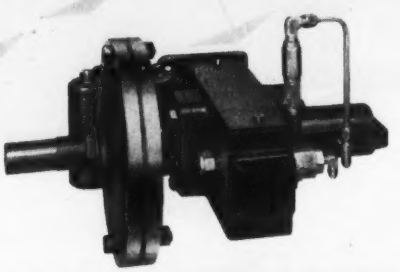
Two types of visual alarm available: bullseye and backlighted name plate

signals are provided by either torpedo bullseye lamps or backlighted illuminated name plates. Alarm is complete and pre-wired. System is designed to include all basic signal circuits. Changes of circuits, operating sequence, or forms, are made simply by changing connections on an inclosed terminal block mounted at rear of cabinet.

Systems which have been designed for three to fifty-four individual signals are also available from stock. All signals in such an alarm unit operate a common horn and acknowledgement push button.

(Panalarm "50" is a development of Panalarm Products, Inc., Dept. CP, 6312 N. Broadway, Chicago 40, Ill. . . . or for more information about this development simply check CP 8347 on handy Reader Service slip between pages 2 & 3.)

Measure & Transmit MICRO-PRESSURES



the ASKANIA PNEUMATIC TRANSLATOR

For the transmission of low static or differential pressures . . in the range of 0–1.0 w.c. or higher. For automatic control or recording of pressure, flow, or liquid level.

It measures low-level signals and transmits an air signal or output pressure at a higher level . . usually standard instrument range of 3–15 p.s.i.

Accurate to ±0.5%. Diaphragm measurement of static or differential pressures eliminates trouble associated with mercury manometers.

For additional details, ask for bulletin 154.

ASKANIA REGULATOR COMPANY
242 E. Ontario Street — Chicago 10, Illinois
Subsidiary of General Precision Equipment Corp.

When inquiring check CP 8348 on handy form, pgs. 2-3

NOW! Accurate Level Control with NO Maintenance!

Photoswitch Electronic Liquid Level Controls have no vacuum tubes — no floats — no moving parts to wear out. So you are sure of accurate level indication and control . . . maintenance-free for unlimited life. Electrolysis is eliminated — probe voltage is less than ½ volt A.C.

UNIVERSAL: pump up — pump down — low level — high level! Two probe rods are suspended into a tank or vat of any size. For a typical pump-up operation: When liquid level falls below lower probe, the control switches on pump motor; when liquid touches upper probe, control shuts off motor. Learn more about this money-saving process control — write for Liquid Level Control Bulletin CA 3.

PHOTOSWITCH INCORPORATED
77 Broadway, Cambridge 42, Mass.
Offices in all principal cities

When inquiring check CP 8349 on handy form, pgs. 2-3

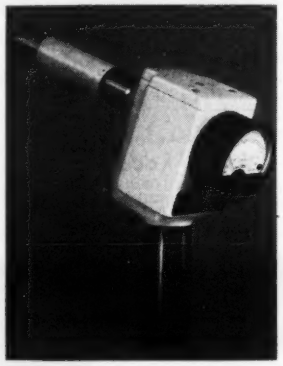
Pistol-like voltage indicator takes a bead on hazardous static charges . . .

measures static charge at a distance or can be used to estimate other electrical quantities

Uses: Indicator reads static charges at a distance and allows estimation of static voltages. Instrument can also be used for measuring the quantity of charge, resistance, or capacitance of bodies.

Features: Instrument does not just indicate presence of static, it allows static voltage, hence hazard, to be estimated quantitatively.

Description: Static detector and meter operates on the principle that a small voltage, proportional to that being measured, is induced at the "gun". This signal is fed to grid of an electrometer tube, plate current is measured by meter. Calibration allows inducing voltage to be read directly as a function of the distance from the gun to the source of static. Thus measurement is a voltage gradient, or volts per foot. Scale extends to 2000 volts per foot and adjustable sleeve is calibrated to give readings multiplied by one, ten, and one-hundred times the scale reading.



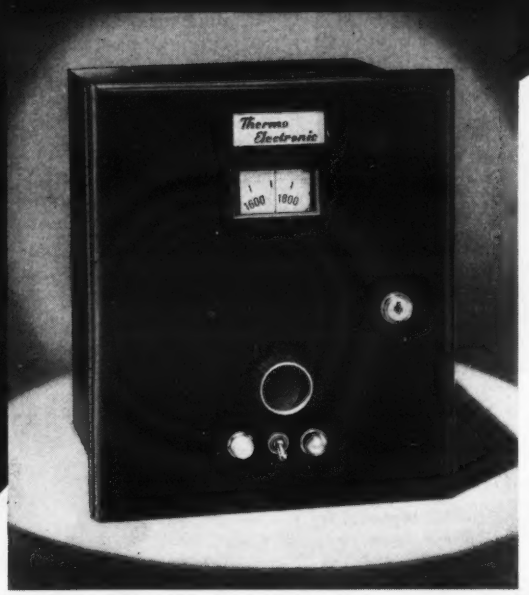
Distinguishes between positive and negative charges

Instrument consists of a pistol like body and grip which contains batteries, switches, and adjusting controls. Detachable cylindrical part corresponding to a pistol barrel contains electronic tube, capacitance coupling plate, and gravity-operated setting switch with sliding member for control of sensitivity. Instrument discriminates between positive, negative and alternating potentials. Accessories enable instrument to be used for measurement of charge and resistance to ground or to any other reference point. It can also be used to estimate capacitance of bodies insulated from ground.

In operation, tube heats in a few seconds after instrument is switched on and readings may then be made of the surface at which the instrument is pointed. Meter reading is then multiplied by distance between gun and charged surface (and also times multiplying factor if calibrated sleeve is used). Reading, in this case, would be a negative charge. If charge is positive, pointer will move to zero and to read voltage, instrument must be rotated to close gravity switch.

(Statigun is manufactured in England. Exclusive agent in this country is Herman H. Sticht Co., Inc., Dept CP, 27 Park Place, New York 7, New York . . . or for more information check CP 8350 on handy Reader Service slip between pages two and three.)

REQUIRE PRECISE TEMPERATURE CONTROL?



Thermo Electronic
TEMPERATURE CONTROLLERS

provide
NULL BALANCE ACCURACY
ELECTRONIC SENSITIVITY
AND SPEED

AT LOW COST

Now, with Thermo Electronic Controllers, thermocouple and resistance bulb types, you can afford accurate, automatic temperature control on processes and equipment operating between −100°F and 3000°F. The two-position control action is continuous and high speed, only one part—a magnetic control relay—moves positively when the process calls for a change of heat. Both types of controllers incorporate a null balance circuit for high measuring accuracy with an electronic control system for sensitivity and speed. Calibration is guaranteed to within plus or minus ¼ of 1% of full scale range. Bright signal lights indicate temperature conditions and are clearly visible over wide angles and great distances.

Outstanding features of Thermo Electronic Controllers are simplicity of design and sturdy and compact construction. They are easy to install, economical to operate, and require little maintenance. Severe vibration or mechanical shock will not affect the measuring accuracy or control sensitivity.

TELL US ABOUT YOUR TEMPERATURE CONTROL PROBLEM OR WRITE FOR

Thermocouple Pyrometer Controller Bulletin 50 R
Resistance Bulb Controller Bulletin 55 R

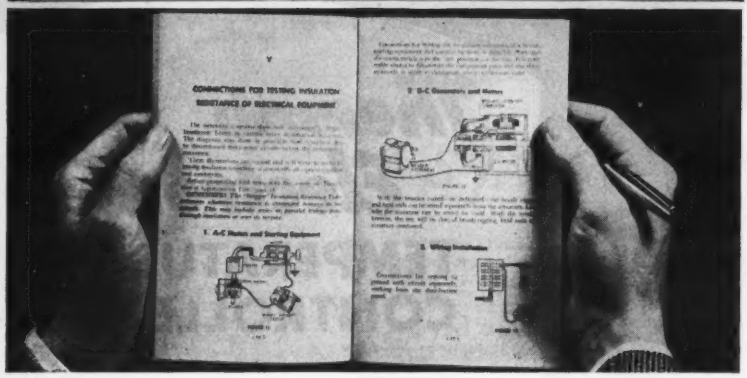
OTHER THERMO ELECTRIC PRODUCTS

Thermocouples
Protection Tubes
Quick Coupling Connectors
Thermocouple and Extension Wires
Resistance Bulbs
Connector Panels

Thermo Electric Co. Inc.
FAIR LAWN NEW JERSEY

When inquiring check CP 8351 on handy form, pgs. 2-3

BIDDLE *Instrument News*



MEGGER® MANUAL

Tells You How To Test ELECTRICAL INSULATION

40,000 Copies Have Been Distributed

This 94 page manual is in demand by educators as well as practical electrical men. It covers subjects of necessity to anyone who is responsible for electrical equipment.

"Why Test Insulation Resistance?"
"Preparation of Apparatus for Test"
"Tests When Drying Out Wet Apparatus"
"Temperature Correction"
"Methods and Interpretation"

These are but a few of the 14 chapters that are built around the subject of testing electrical insulation resistance . . . and, of course, effective use of the Megger® Electrical Insulation Resistance Tester sold in the U. S. only by the James G. Biddle Co. Supply is limited. Please write on your company letterhead for **INSTRUCTION MANUAL 21-J-CP.**

ELECTRICAL PREVENTIVE MAINTENANCE MATERIAL

Written by Practical Electrical Men

BULLETIN 21P8—"The Story of Electrical Insulation Resistance"

BULLETIN 21P9—"Maintenance of Industrial Electrical Equipment"

BULLETIN 21P10—"Cut Electrical Breakdowns"

BULLETIN 21P11—"Getting the Most From Insulation Resistance Measurements"

BULLETIN 21P12—"Preventive Maintenance of Electrical Equipment"

BULLETIN 21P16—"Motor Maintenance with a Check Chart for Alternating- and Direct-Current Motors"

You can tell from Megger Insulation Tester readings if insulation is going bad before it breaks down. Periodic readings provide the means for keeping your finger on the pulse of your electrical equipment, saves time and repair bills.

YOU MAY HAVE ONE OR ALL WITHOUT CHARGE

JAMES G. BIDDLE CO.

• ELECTRICAL TESTING INSTRUMENTS
• SPEED MEASURING INSTRUMENTS
• LABORATORY & SCIENTIFIC EQUIPMENT

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Please mail me: ☐ Bulletin 21P8 ☐ Bulletin 21P9 ☐ Bulletin 21P10 ☐ Bulletin 21P11 ☐ Bulletin 21P12 ☐ Bulletin 21P16

*Name*_____

*Job*_____

*Company*_____

*Address*_____

When inquiring check CP 8352 on handy form, pgs. 2-3

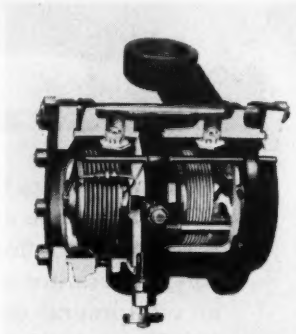
Accurately senses flow, level of liquid without being leveled . . .

differential unit uses no mercury — has bellows instead

Uses: Differential pressure transmitter can be used for flow measurement, gaging liquid level in vessels, similar uses.

Features: Transmitter employs no mercury. It need not be leveled to make accurate measurements.

Description: Dri-Flo Transmitter is commonly used in recording flow meters, pneumatic controllers, transmitters, differential valves, and telemetering devices. Because no mercury is required, there is no need for precise leveling of the instrument.



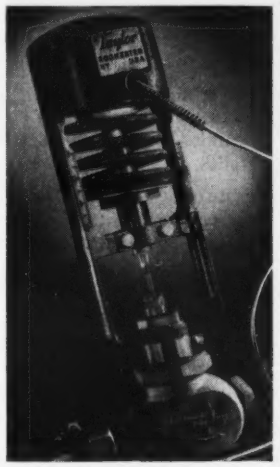
Transmitter employs stainless steel bellows rather than mercury

Corrosion-resistant stainless steel bellows in internal working parts make meter adaptable without seal pots. Corrosive gases, such as hydrogen sulfide, sulfur dioxide, ammonia, and some acids can be handled. Meters are designed for working pressures to 1000 psi, though bellow-type pressure elements are available for ranges of 50 psi and below.

Basic unit consists of a center section with two opposed fluid filled bellows attached, a meter body surrounding the bellows, and Teflon seal stuffing box shaft which transmits bellows movement to recording mechanism. Bellows fluid is non-corrosive, low freezing point liquid.

Temperature compensator attached to high side bellows compensates for changes of bellows liquid in the range from minus 25 to 175°F. Differential pressure ranges can be adjusted by means of range spring

INSTALL IT! FORGET IT!



THAT'S all you have to do with this Taylor Self-Acting Temperature Controller! Simple, dependable, needs practically no maintenance. Ideal where your process involves no extreme load changes. Where compressed air or electricity aren't available.

For jobs like: wax coating machines, plating and rinsing tanks, bottle and can washers, mixing and cooling kettles, hot water tanks, diesel water jackets, feed water systems, crude oil treaters, condenser cooler water in stills, oil field superheaters and others.

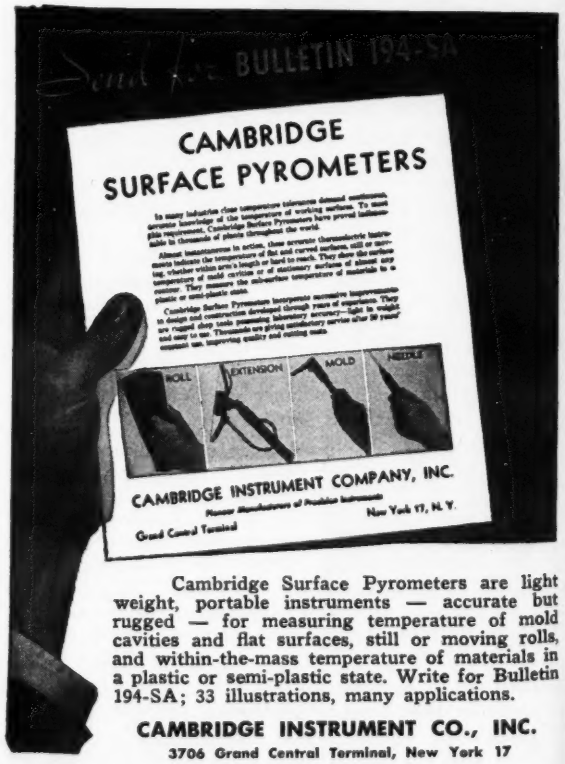
No auxiliary air supply required. Double seated valves available up to 2"; single seated composition disc types up to 1". Numerous standard temperature ranges within 10° to 340°F., and semi-standard temperature ranges within 165° and 610°F Choice of bulb materials and type of connection.

Ask your Taylor Field Engineer or write for **Catalog 36-R.** Taylor Instrument Companies, Rochester, N. Y., or Toronto, Canada.

Instruments for indicating, recording and controlling temperature, pressure, flow, liquid level, speed, density, load and humidity.

TAYLOR INSTRUMENTS MEAN ACCURACY FIRST

When inquiring check CP 8353 on handy form, pgs. 2-3



Cambridge Surface Pyrometers are light weight, portable instruments — accurate but rugged — for measuring temperature of mold cavities and flat surfaces, still or moving rolls, and within-the-mass temperature of materials in a plastic or semi-plastic state. Write for Bulletin 194-SA; 33 illustrations, many applications.

CAMBRIDGE INSTRUMENT CO., INC.
3706 Grand Central Terminal, New York 17

PIONEER MANUFACTURERS OF PRECISION INSTRUMENTS

When inquiring check CP 8354 on handy form, pgs. 2-3

assemblies. Standard differential ranges are 0 to 50, 100, and 200 inches of water.

Die cast aluminum cases are furnished for pedestal and panel-mounting. These are suitable for indoor or outdoor installation. Cases are dust- and moisture-proof, protecting spring, clock, chart, and recording parts. Finish is black baked enamel.

(Dri-Flo Meters are development of American Meter Co., Inc., Dept. CP, 1513 Race St., Philadelphia 2, Pa. . . . or for more information about this product simply check CP 8355 on handy Reader Service slip between pages two and three.)

Magnetic drag replaces friction in hysteresis brake for yarns . . .

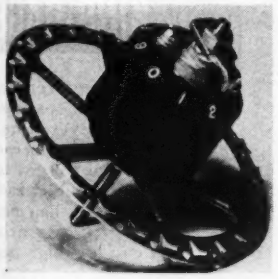
provides 4 to 10 grams tension which is fairly constant with varying speed

Uses: Provides reasonably constant, adjustable tension at standard speeds for all yarn spooling operations.

Features: Magnetic drive replaces friction to give tension over a range of 4 to 10 grams at speeds up to 600 yards per minute.

Description: Pulley of tension controller has its rotation retarded by magnetic drag or hysteresis effect. This eliminates wide tension variations, surface clogging, and wear usually associated with conventional friction brakes. Alnico magnets are used to provide braking power.

Brake includes a rotor and stator both containing Alnico magnets so designed and mounted that magnetic restraining force on the rotor is essentially constant at all speeds. Pulley is designed to eliminate slippage, it turns rotor against a uniform restraining torque. Tension adjustments can be made by turning calibrated head.



Abrasion to yarn is minimized because yarn is maintained in positive contact with pulley. It is not rubbed over another surface. Brakes are calibrated as final manufacturing step to insure that corresponding settings will produce corresponding tensions. Brake provides reasonably constant torque regardless of speed. Slight increase in tension is caused by windage on pulley and material being handled as speed is increased.

Brake also provides tension when spindle is stopped. It actually reverses direction of rotation for a few degrees after decelerating to standstill.

(Magnetic Hysteresis Brake has been developed by General Electric Company, Dept. CP, Schenectady 5, N. Y. . . . or for more information check CP 8356 on handy form, pages 2 and 3.)

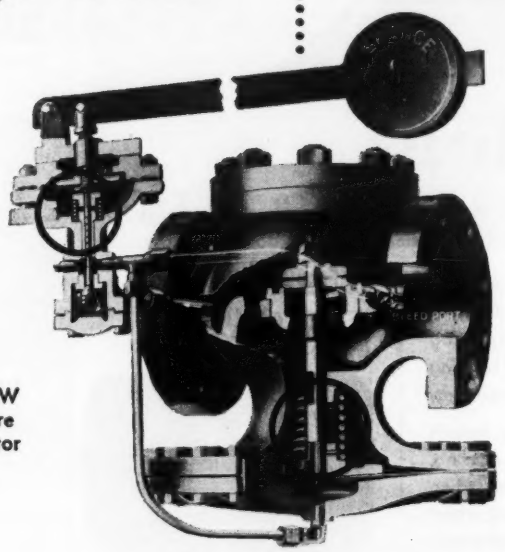
HOW SPENCE DESIGN...

...protects springs

FOR LONGER LIFE

In the Spence Regulator, the springs are out of the path of the steam or other fluid flowing through the valve. They operate at low unit stress for exceptionally long life. This is only one of the many Spence design features that assure dependable, accurate regulation year after year. That means less down-time, less time and money wasted on replacement of parts.

Spence makes a wide line of automatic regulating valves: Pressure, Temperature, Differential Pressure, Back Pressure, Pump Governor and many other types. Write for bulletin 100 giving full details.



Type EW Pressure Regulator

A few other design features:

SECO METAL SEATS AND DISCS—Durable SECO Metal resists wiredrawing. More than twenty years of experience in thousands of installations has failed to produce a single case where SECO Metal has been cut by steam.

LARGE BALANCED METAL DIAPHRAGM located in a cooled zone with a condensate seal above and below it, never has to be replaced under normal conditions.

PACKLESS CONSTRUCTION—All Spence main valves and most pilots are built without stuffing boxes. This minimizes friction . . . reduces valve stem wear and eliminates time-consuming maintenance.

Spence

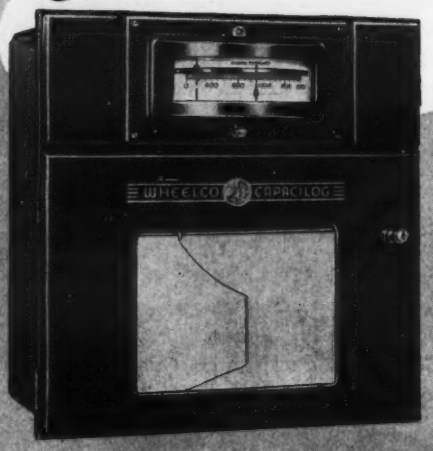
SPENCE ENGINEERING COMPANY, INC.

WALDEN, NEW YORK

SE123

When inquiring check CP 8357 on handy form, pgs. 2-3

efficiently simple



WITH THE "ELECTRONIC LINK"

wheelco capacilog

STRIP CHART RECORDER

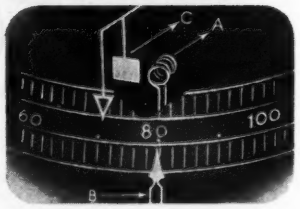
Designed with a minimum of moving parts for greater mechanical stability and maintenance-free service, the Capacilog is the foremost choice of leading process control engineers.

Wheelco "Electronic Link" control assures instant response and precise recording. You gain other advantages including plug-in chassis, automatic chart reroll, and flexible coupling to eliminate all lost motion in the vertical shaft.

For positive regulation of the chemical process variable, specify the Recorder that has been tried and proven through years of actual field installations — Wheelco CAPACILOG.

SEND FOR BULLETIN C2-2

wheelco "ELECTRONIC LINK" control circuit



An oscillating current flows between coils "A" which are mounted on movable arm "B". When a metal flag "C" on the indicating pointer moves between the coils due to a change in the controlled variable, the oscillating current changes its frequency. This frequency change furnishes the impulse required to position the motor driven recorder pen.

BARBER COLMAN

Instrumentality

wheelco instruments division

BARBER-COLMAN COMPANY

1258 ROCK ST. • ROCKFORD, ILLINOIS, U. S. A.

When inquiring check CP 8358 on handy form, pgs. 2-3

Unitized design permits interchanging parts of annunciator . . .

dust-tight enclosure is not hermetical, can be repaired

Uses: Annunciator system signals changes in condition throughout a plant or installation. System can be made up of signal or flashing lights, and horns.

Features: Interchangeability is an important feature of system, several types of signals can be used on standard outlets.

Description: Though hermetically sealed models are available for use with this system, dust-tight units suitable for Class 1 Division 2 applications are not hermetically sealed. Enclosure is dust-tight, but may be opened for repair or inspection. Same relays and parts are used in both hermetic and non-hermetic units.

Over one hundred standard circuits are available and may be arranged in various operating sequences in the field by simple changes at terminal connections. Signaling elements range from turret lens through conventional back-lit transluscent signs including also, horns, acknowledgment buttons, etc.

Chassis of unit embodies steel base member supports with either industrial type octal or flush type multi-pin sockets. Plug-in support brackets hold each relay unit in position.

(Type LPG Tel-Alarm units are products of Tigerman Engineering Co., Dept. CP, 4332 N. Western Ave., Chicago 18, Ill. . . or for more information check CP 8359 on handy form, pgs. 2-3.)

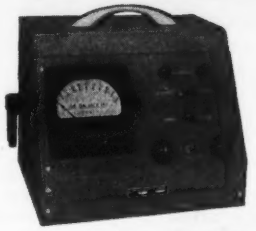
Electronic equipment listed in catalog

Contact meter-relays and control assemblies are featured in descriptive catalog. Technical descriptions and suggested circuits are given for meter-relays, and matched components for use in circuits are outlined. Control assemblies, wired and tested, using these circuits are listed.

Cat 2-A is available on letterhead request to Assembly Products, Inc., Dept. CP, Main at Bell St., Chagrin Falls, Ohio.

EVALUATE YOUR APPLICATION FOR THERMAL CONDUCTIVITY with

GOW-MAC GAS MASTER



OFFERING ALL THESE ADVANTAGES

- SIMPLICITY
- LOW COST
- RAPID RESPONSE
- VERSATILITY

Engineer Your Gas Sampling System at Low Cost!

Gow-Mac units are recommended for rare gas quality control, monitoring inert and special atmospheres, monitoring humidity, drying tower efficiency, washing tower operation, checking methyl bromide concentrations for fumigation, observing re-activation cycles, gas mixing, leak detection, combustion efficiency, etc.

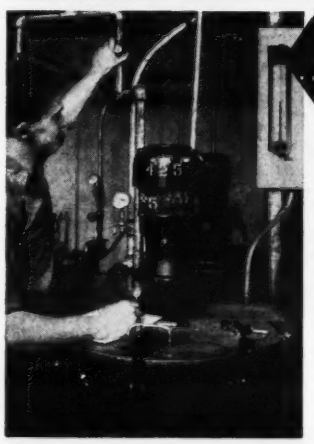
Gow-Mac instruments and cells are used by Government Bureaus, Industrial and University research projects, on portable and permanent apparatus.

INQUIRIES ON SPECIFIC PROBLEMS WILL RECEIVE PROMPT ATTENTION

GOW-MAC INSTRUMENT CO.
22 LAWRENCE ST., NEWARK 5, N. J.

When inquiring check CP 8360 on handy form, pgs. 2-3

For Faster, More Accurate MIXING and FORMULATING



. . . the KING-GAGE

King-Gage here shows correct weight of thinners added direct from storage to closed mixing tank in paint room of major auto plant. Fast; safe; accurate.

In mixing or formulating of paints, oils, soaps, plastics—wherever liquids must be *weighed* or *measured*—King-Gages save time and trouble. Faster, more accurate than metering or stick measuring. Save cost of weigh tanks. Used with all types of tanks and vessels, open and closed. Quickly read in any desired units of *volume* or *weight*. Located at the tank or for remote reading. Work as a frictionless balance; have no mechanical moving parts. *Investigate!*

FREE KING-GAGE BULLETIN gives full details; shows typical applications. Write for a copy.

KING INSTRUMENTS

KING ENGINEERING CORP.
Box 50 • Ann Arbor, Mich.
SERVICE REPRESENTATIVES IN PRINCIPAL CITIES

When inquiring check CP 8361 on handy form, pgs. 2-3

Vapor actuated, controller handles moderate loads of AC or DC . . .

500 watts AC or 50 of DC respond to temp changes in composite range from –30 to 230°F

Uses: Controls solenoid valves, motors, warning signals, etc, without intermediate relays.

Features: Normally rated for 115 volts AC or DC, controllers are also available for 250 volts or even higher. Standard unit handles 500 watts AC or 50 watts DC.

Description: Controller is actuated by vapor pressure from a conventional sensing bulb. (A similar pressure controller is also built.) Temperature is indicated by a dial thermometer on the face of instrument. Control-point knob located just below thermometer dial allows settings to be made.

Standard temperature ranges for controller are listed below:

—20 to 100°F	30 to 300°F
0 to 100°F	100 to 350°F
30 to 180°F	200 to 450°F
30 to 240°F	

Centrigrade calibration for these ranges is also available.

Electrical mechanism consists of an SPDT snap-action switch. This may be used in a normally open or normally closed position. Physical vibration of the instrument will not change set point or cause contacts to chatter. Red and green pilot lights operate with switching mechanism to show control status.

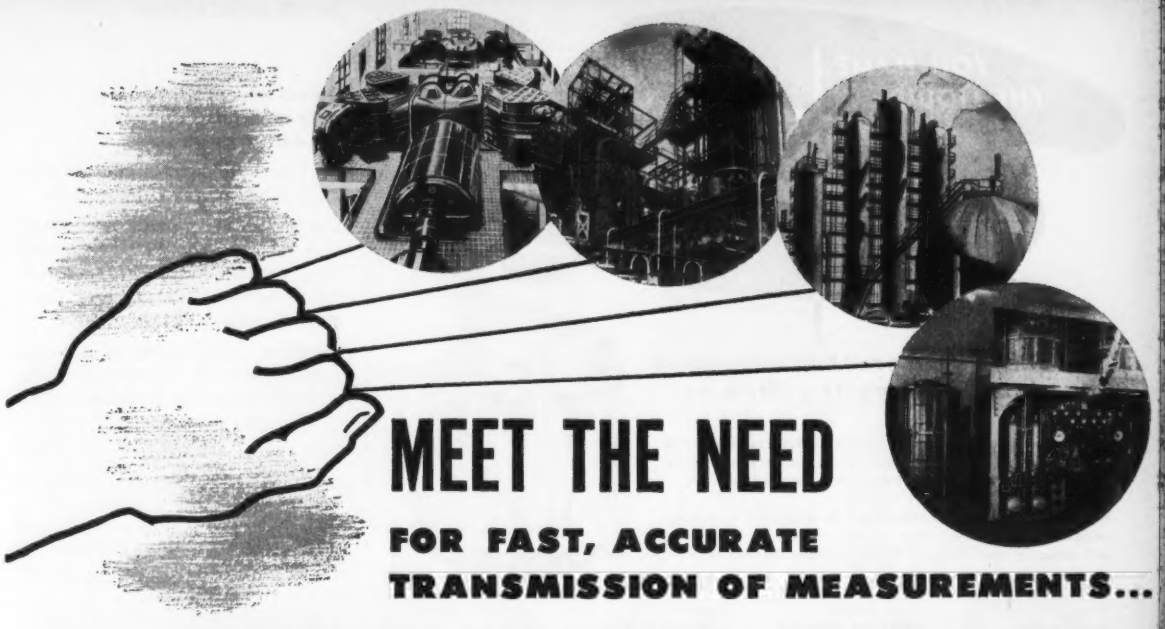
Standard connecting tube is brass armored and six feet long. Tubes up to 40 feet long can be used, but above this a larger bulb is needed. Lead and plastic covered tube can also be furnished.

(Vapor Actuated Temperature Controller is a development of H. O. Trerice Company, Dept. CP, 1420 W. Lafayette Blvd., Detroit 16, Mich. . . . or for more information about this development simply check CP 8362 on handy form, between pages 2 and 3.)

Describes features, operation of analog computer

Illustrated catalog presents detailed information regarding specifications, features, and operation of analog computer unit. In addition, informative booklet discusses general theory of analog computers and describes method of setting-up problems for solution. Three pages of typical examples in various fields of dynamics furnish graphical illustration of these principles.

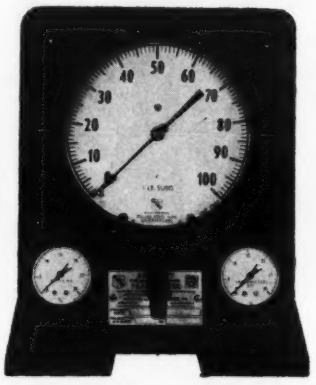
Simulator unit which allows addition of backlash, dead-zone, and limit stops to analog computers is described. Cat CCA-3 is available from Burlingame Associates, Dept. CP, 103 Lafayette St., New York 13, N. Y. When inquiring specify CP 8363 on handy Reader Service slip between pages 2 and 3.



MEET THE NEED

FOR FAST, ACCURATE TRANSMISSION OF MEASUREMENTS...

ASHCROFT PNEUMATIC TRANSMITTERS



ASHCROFT PNEUMATIC PRESSURE TRANSMITTER with two 2-inch gauges, one reading "Air Supply," the other "Transmitted Air." Other types available for temperature, differential pressure, flow and liquid level.

Measurements of pressure, temperature, differential pressure, flow and liquid level must be transmitted quickly, accurately and safely to assure the efficiency required by modern process engineering. Ashcroft Pneumatic Transmitters more than fill those requirements—contribute greatly to the perfect performance demanded of vital instrumentation at one or more remote control centers.

Ashcroft Transmitters are ideal for all process industries and power stations—wherever it is desirable to confine high pressures or inflammable, poisonous or corrosive liquids and gases close to their source. They are also highly suitable where fire or explosion hazards make electrical wiring objectionable, or where the existing source of compressed air can easily be used.

Built into Ashcroft Transmitters are many design advantages proved through years of experience in manufacturing pressure gauges. They operate on low-pressure air—transmit proportionate air pressures to one or more pressure-actuated receiving indicators, recorders and controllers up to 1000 feet away with accuracy within ½ of 1%. Expensive, high-pressure lines and fittings, with all their leakage and maintenance problems, are avoided.

Write for details about Ashcroft Pneumatic Transmitters. Or ask your nearby Instrument Distributor for complete data on all types.

YOUR INSTRUMENT DISTRIBUTOR carries Manning, Maxwell & Moore products because he wants to be sure you get the best in quality, performance and economy. You can depend on him for prompt service.

ASHCROFT GAUGES

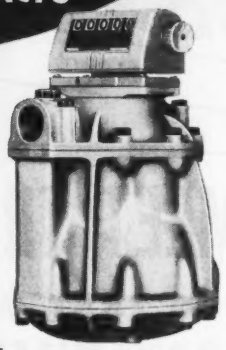
A product of **MANNING, MAXWELL & MOORE, INC.** STRATFORD, CONNECTICUT

MAKERS OF 'ASHCROFT' GAUGES, 'HANCOCK' VALVES, 'CONSOLIDATED' SAFETY AND RELIEF VALVES, 'AMERICAN' INDUSTRIAL INSTRUMENTS. BUILDERS OF "SHAW-BOX" AND 'LOAD LIFTER' CRANES, 'BUDGIT' AND 'LOAD LIFTER' HOISTS AND OTHER LIFTING SPECIALTIES.

When inquiring check CP 8364 on handy form, pgs. 2-3

YOU NAME THE LIQUID . . .

BOWSER (ESTABLISHED 1885) WILL MEASURE IT WITH XACTO



. . . "the meter that changed chemical processing habits"!

For over a quarter century Bowser Xacto meters have brought to the chemical industry an entirely new way to measure liquids accurately and dependably.

Wherever accurate measurement is essential to assure uniformity of product and control costs . . . there you will usually find Bowser Xacto meters on the job.

Today XACTO meters are handling these and 638 other liquids. . . .

Acetic Anhydride	Amyl Acetate	Carbolic Acid	Iso-Propyl Acetate
Alum Solution	Anhydrous Ammonia	Cellosolve Acetate	Lactic Acid
Ammonium Chloride	Aqueous Ammonia	Copper Nitrate	Napthenic Acid
Ammonium Nitrate	Arsenic Acid	Copper Sulphate	Resin Alkyd
Ammonium Phosphate	Butyl Acetate	Cresol	Stearic Acid
Ammonium Sulphate	Calcium Bisulphite	Cresylic Acid	Tannic Acid

MAY WE SEND COMPLETE DATA?

BOWSER

BOWSER, INC., 1315 Creighton Avenue, Fort Wayne 2, Ind.

Regional Offices • Atlanta • Chicago • Cleveland • Dallas • Kansas City • New York • San Francisco • Washington, D. C. • Hamilton, Ont.

When inquiring check CP 8365 on handy form, pgs. 2-3

Can you afford to be without corrosion-resistant thermometers?

Production errors caused by thermometer failures can be mighty costly.

The corrosion-resistant, pressure-tight construction of Rochester dial thermometers saves you this sort of expensive trouble. And it practically doubles the life of the thermometer under severe operating conditions.

An exclusive stainless steel welding process bonds case, stem and nut into a single corrosion-resistant unit.

RECALIBRATE ON THE JOB

Rochester dial thermometers are built to stay accurate under rough treatment. But if an unusually hard blow knocks the pointer out of adjustment, you can recalibrate it quickly and easily by turning a single screw.

You can order money-saving Rochester thermometers from one of our specialized instrument representatives, listed in Sweet's Catalog or the yellow pages of your telephone directory. Or write us direct for further details.

MILLIONS of Rochester dial thermometers are now delivering dependable service

Rochester Manufacturing Company, Inc.
86 Rockwood St., Rochester 10, N. Y.

DIAL THERMOMETERS GAUGES AMMETERS

When inquiring check CP 8366 on handy form, pgs. 2-3

Direct electrical control acts on signal of only 2" water gage . . .

pressure acting control sensitive to tiny differentials

Uses: Can control static pressure in discharge duct of fan system, overfire draft and combustion chamber, signal fan failure, loss of exhaust, etc.

Features: Units operate in range from 0 to 20 inches of water with acting differentials from 0.2 to 2 inches of water.

Description: Controls are for application on very low pressures where regulation is required in inches of water. Units are of small physical size (diameter of round diaphragm housing shown

Used at static pressures from 0 to 20 inches of water

is 4½ inches). Diaphragm is silicone-impregnated glass cloth permitting operation at high or low temperatures over long periods of time. Controllers are suitable for direct electrical control without relays — Underwriter's Laboratories approve electrical side of controller for 10 amp at 125 volts or 5 amp at 250 volts AC.

The pressure signal is brought in through one tube, with no return needed.

(101P Controls are products of The Henry B. Dietz Company, Department CP, 12-16 Astoria Boulevard, Long Island City 2, New York . . . or for more information about this development simply check CP 8367 on handy Reader Service slip between pages 2 and 3.)

Depend on AUTO-LITE for Temperature Indication

You Benefit from Eye-Level Readings

Model F-1 temperature indicator

3-way adjustable mounting

Auto-Lite offers many thermometer styles, permitting plant-wide temperature observation at low cost. Standard temperature ranges from minus 60°F to plus 750°F. Send for latest catalog showing various types.

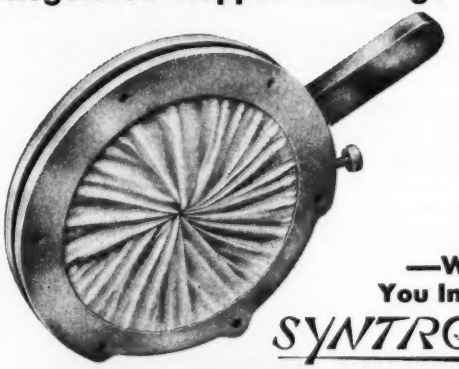
Rigid stem or capillary tubing for EYE-LEVEL remote reading. Priced from $22.

THE ELECTRIC AUTO-LITE COMPANY
INSTRUMENT AND GAUGE DIVISION
TOLEDO 1, OHIO
NEW YORK • CHICAGO • SARNIA, ONTARIO

TEMPERATURE INDICATORS & RECORDERS

When inquiring check CP 8368 on handy form, pgs. 2-3

Regulated Hopper Discharge



—When You Install SYNTRON FLOW CONTROL VALVES With Flexible Diaphragm

Syntron Flow Control Valves provide positive control — wide-open pouring or complete shut-off — on bins, hoppers, and chutes. They fasten securely to hopper openings — eliminate spillage and shortage of materials. No metal parts to jam when opening or closing.

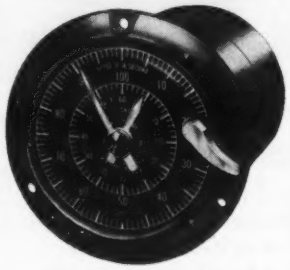
Write for FREE Catalogue

SYNTRON CO.
110 Lexington Avenue Homer City, Pa.

When inquiring check CP 8369 on handy form, pgs. 2-3

Timing accuracy is 0.02% because overrun and lag are reduced . . .

two ranges cover 60 seconds to nearest 0.01 second and 60 minutes to 0.01 minute



Employs differential clutch

Uses: Accurate indication of short elapsed times.

Features: Accuracy of either of two types is 0.02% — with types reading to 0.01 second and 0.01 minute, respectively.

Description: Elapsed times up to 60 seconds, or up to 60 minutes are measured accurately by compact time totalizer. High accuracy is due to use of differential clutch mechanism. Synchronous motor drives sun gear of differential gear system. One differential member is connected to pointer system, other goes to a free gear. When timer is energized, solenoid operated pawl stops free differential member, transferring power to pointer. De-energized, timer's pawl engages pointer gear stopping it instantly. Rotation is then taken up by free gear.

(Type ET Time Totalizer is a product of The R. W. Cramer Company Inc., Dept. CP, Centerbrook 5, Conn. . . . or for more information check CP 8370 on handy form, pages 2 and 3.)

Delays contact up to 15 sec, scale shows delay time to split-second . . .

moving coil relay is really a meter with set-point adjustment on scale

Uses: Provides variable delay time up to 15 seconds.

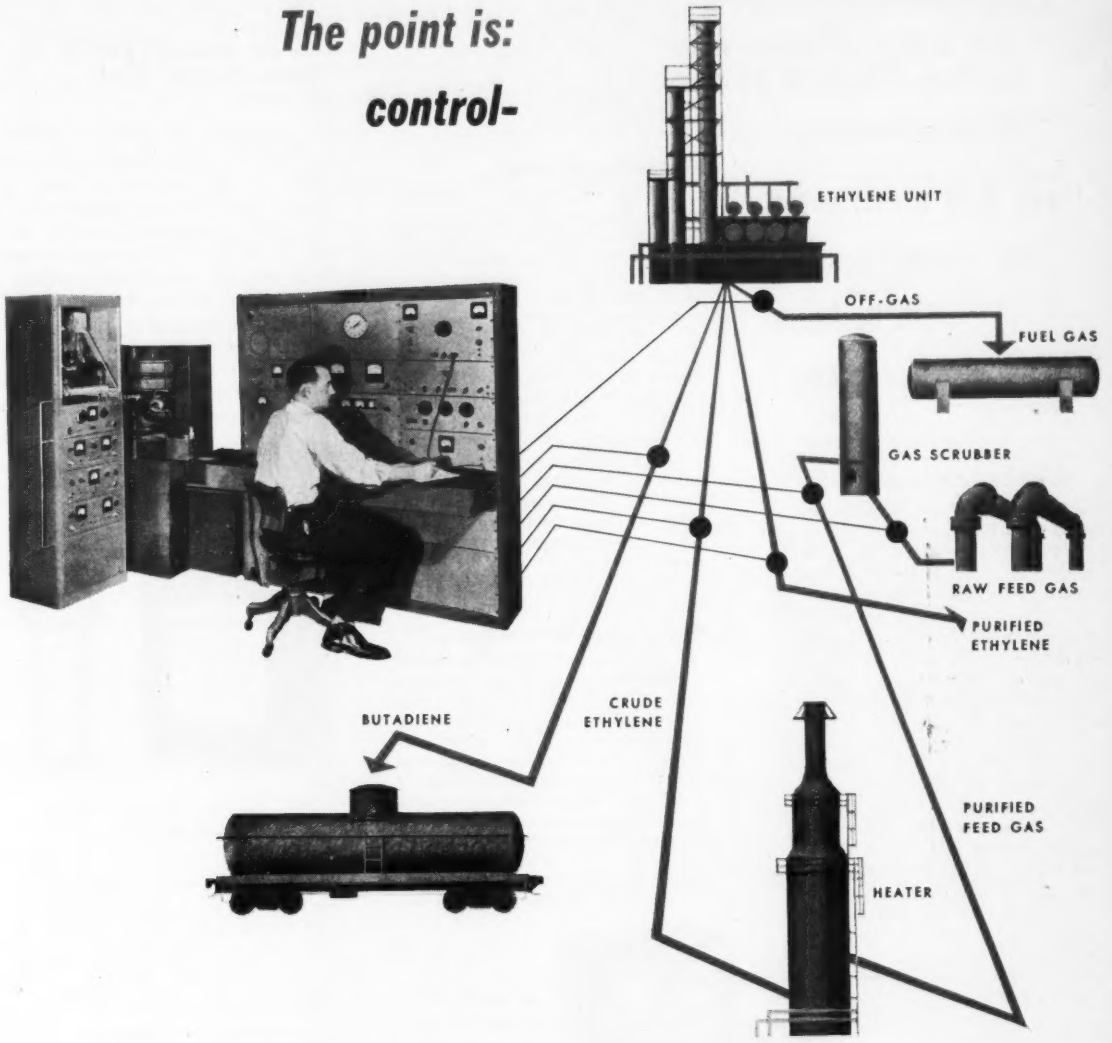
Features: Setting is made on logarithmically calibrated meter scale. Settings can be made to fractions of second, especially at low end of scale.

Description: Standard contact meters can be furnished with calibrated time delay. Dial can indicate regular values of current, volts, or temperature, or can be calibrated directly in delay in seconds. Contact arrangements and ratings are identical with those for the same meter under other conditions. Normal reset time is about the same as operate time. Special adaptations can provide fast operate time with slow release, or slow operating time with fast release.

Because of the great number of possible variations in specifications for relays in time delay service, manufacturer offers consulting service in developing instruments for specific applications.

(Simplytrol Time Delay-Relay is made by Assembly Products, Inc., Dept. CP, P. O. Box 191, Chagrin Falls, Ohio . . . or for more information check CP 8371 on handy form, pages 2 and 3.)

The point is: control-



IN THE huge Texas plant of Jefferson Chemical Company, Inc., at Port Neches, Texas, approximately 50,000 complex control analyses of hydrocarbon mixtures have been made on a single Consolidated Analytical Mass Spectrometer since 1947. These figures indicate the speed, accuracy, and trouble-free service that can be built into a sensitive analytical instrument. For year-in, year-out operation this versatile control instrument offers decided advantages: the cost-per-analysis is only a fraction of the cost by any other method and the results are available in permanent graphic form in a fraction of time otherwise required. One operator and a Consolidated Mass Spectrometer will accomplish complete control over the most complicated chemical processes—in minutes.

Consolidated Engineering
CORPORATION
300 North Sierra Madre Villa, Pasadena 15, California

Sales and Service through **CEC INSTRUMENTS, INC.,** *a subsidiary with offices in: Pasadena, Philadelphia, New York, Chicago, Dallas*

analytical instruments for science and industry

Mass Spectrometer

The Consolidated Analytical Mass Spectrometer shown above is used extensively by leading refineries throughout the world for analytical research as well as process control. For complete information on this instrument, write for Bulletin CEC 1800-X1

When inquiring check CP 8372 on handy form, pgs. 2-3

ONE COMPANY SAVES $300 A WEEK PER INSTRUMENT!

Have YOU investigated the savings possible with Beckman Flame Photometry?

Applications are many and varied!

Flame Photometry (the determination of elements by their flame spectra) is rapidly moving to the forefront as one of the most useful of all instrumental methods of analysis—so rapidly, in fact, that many potential users are not yet aware of the great savings to be made by this time-saving analytical tool. Yet companies that have investigated Beckman Flame Photometry are finding it amazingly profitable. One oil company reports savings of $300 per week per instrument . . . a bottle manufacturer reduced analysis time from 36 hours to 2 hours . . . a municipal water treating plant has solved an important control problem other methods could not satisfactorily handle . . . a fruit processing plant has greatly simplified its control of flavor and quality . . . and many other companies in widely-varying industries are finding new profits, new savings with Beckman Flame Photometry methods.

How Savings Are Made . . .

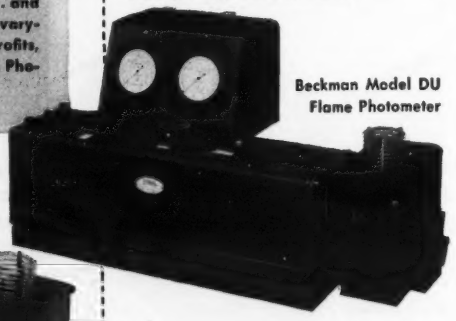
The Beckman Flame Photometer analyzes virtually any aqueous or non-aqueous solution for metals and metallic compounds (quantitatively and qualitatively) at rates as fast as 10 *seconds* per determination—with greater accuracy than other methods.

It will quickly make determinations that other routine methods cannot handle—and is applicable to an unusually wide range of industrial, medical and laboratory processes.

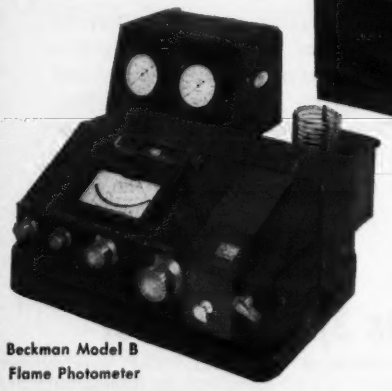
Typical fields of application include analysis and control of brine solutions, beverages, cement, glass, metallurgy (ferrous and non-ferrous), fertilizers, soils, fruits, grains, vegetables, petroleum products, power plant processes, municipal water treatment, biologicals and a great many others.

Why Beckman Equipment . . .

Beckman Flame Photometers use acetylene or hydrogen for a hot steady flame—*not obtainable with city gas.* Direct aspiration of sample into the Beckman flame means faster response, steadier readings and smaller sample consumption. Use of a Beckman Monochromator instead of glass filters provides higher resolution and sensitivity, permitting analysis of many types of samples that cannot be satisfactorily determined on filter type instruments.



Beckman Model DU Flame Photometer



Beckman Model B Flame Photometer

Let us give you complete data.

To better acquaint you with the many profitable applications for Beckman Flame Photometers, we have prepared a helpful data file which outlines applications, methods and equipment. See your nearest Beckman Instrument dealer for free data.

Or write direct for Data File #20-11

BECKMAN INSTRUMENTS control modern industries

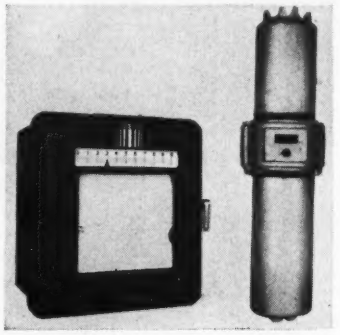
BECKMAN INSTRUMENTS INC.
SOUTH PASADENA 1, CALIFORNIA
Factory Service Branches: Chicago—New York—Los Angeles
Beckman Instruments include: pH Meters and Electrodes — Spectrophotometers — Radioactivity Meters — Special Instruments

When inquiring check CP 8373 on handy form, pgs. 2-3

One CO_2 among 1249 N_2 makes analyzer read full scale . . .

low-drift infrared analyzer applied to many mixtures

Uses: Analyzer can be used to detect and measure quantity of one gas in complex mixtures. In five years of field testing it has been used on carbon monoxide in regenerator gas of fluid catalytic cracking units, sulfur dioxide in paper manufacture, methane in ammonia manufacture, isobutane in alkylation units, and many other gas compounds.



Recorder and infrared unit of gas analyzer

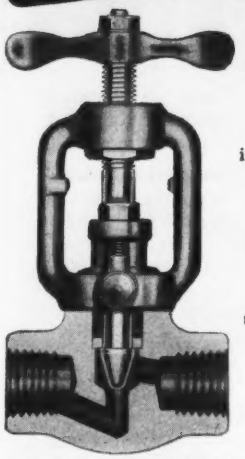
Features: Drift stability is very good — 7-day stability of $\pm 0.001\%$ CO_2 was typical in measuring carbon dioxide content in CO_2-nitrogen mixture with maximum CO_2 being 0.08%.

Description: Negative filtering method enables infrared analyzer to measure with high selectivity. Although all compounds in continuously flowing gas stream absorb some of the transmitted infrared, absorption of background gases either cancels out automatically, or is blanketed by filter cell. Reading, therefore, is made on difference of radiation through sample and reference cell.

This difference represents absorption of selected gas compound only. Differential thermopile produces corresponding voltage which is recorded as per cent concentration by Speedomax recorder. Overall response time is about 10 seconds, permitting quick adjustments in critical processes.

In a typical application, infrared analyzer has been used to measure carbon dioxide content of nitrogen over extremely narrow range of 0

PRECISION REGULATION
Edward Instrument Valves



New Edward Fig. 952 series instrument valves, so compact they fit limited spaces in such hook-ups as panel boards and manifolds, give precision regulation for meter, gage, regulator, by-pass and instrument lines of all types. Forged steel, globe or angle. Rated 6000 lb WOG, 1500 lb 850 F in carbon steel. Also in stainless steels with higher ratings.

- No bonnet joint to leak.
- Swing bolted gland for easy packing.
- Needle point stem, fine pitch threads for accurate regulation.

WRITE FOR NEW BULLETIN Bulletin 491, with full details, is yours for the asking.

Another Product
Edward Valves, Inc.
Subsidiary of ROCKWELL MANUFACTURING COMPANY
1230 West 144th Street, EAST CHICAGO, INDIANA

When inquiring check CP 8374 on handy form, pgs. 2-3

All-Electric Floatless
LIQUID LEVEL CONTROLS

- Write for latest catalog covering the complete line of B/W Induction Relays, Induction Relay Switches, Relay Enclosures, Contactors and Starters, Multiple Pump Controls, Electrode Holders, Starter and Relay Combinations, Special Controls and Panels.

Controls will never trouble you, when you buy B/W

B/W CONTROLLER CORPORATION
2204 East Maple Road, Birmingham, Michigan

FIRST IN THE FLOATLESS CONTROL FIELD

When inquiring check CP 8375 on handy form, pgs. 2-3

More Accurate Level Reading of LOW TEMPERATURE LIQUIDS . . .

JERGUSON

Large Chamber

NON-FROSTING* GAGES

YOU get the highest possible accuracy of reading on low temperature, low boiling point liquids with the patented Jerguson Non-Frosting Gage in the New Large Chamber model . . . because it insures less turbulence at the meniscus, and clear vision at the vision slot.

This new Jerguson model has 6 times larger area at the meniscus than the standard gage, so that there is a marked reduction in turbulence with light gaseous fluids that tend to boil or surge. Moreover, the problem of frosting encountered with these liquids has been eliminated by a patented frost preventing unit extending from the gage glass. This special transparent unit projects beyond the cover bolts and prevents frost from building up over the vision slot.

Here's a dual feature gage that assures greatly increased accuracy of reading for the process industries. If you have a problem with light gaseous fluids, or with gage frosting, it will pay you to investigate the new Jerguson Large Chamber Non-Frosting Gage . . . reflex or transparent.

Jerguson Large Chamber Gage, Transparent Type, with the patented Non-Frosting Gage Glass Extension. Write for literature on this gage, and on other non-frosting Jerguson models.

**Patented*

JERGUSON

Gages and Valves for the Observation of Liquids and Levels

JERGUSON GAGE & VALVE COMPANY

100 Fellsway, Somerville 45, Mass.

Offices in Major Cities

Jerguson Tress Gage & Valve Co., Ltd., London, Eng.
Pétrole Service, Paris, France

When inquiring check CP 8376 on handy form, pgs. 2-3

to 0.08% CO_2. Seven-day stability is noted above. Sensitivity of plus or minus 0.0004% carbon dioxide was attained with a readability within 0.001% carbon dioxide.

Flexibility is achieved by means of a range-changing dial. Same design of analyzer cell column is used for all measurements, but various lengths of sample and filter cells can be used in order to achieve the maximum sensitivity in a particular instance.

Analyzer consists essentially of infrared unit, electronic recorder, and an automatic gas standardizer (optional). Equipment can be supplied calibrated or uncalibrated, for single or multipoint recording, and for electric or pneumatic control. Standard housings as well as housings for hazardous areas are also available.

(Infrared Gas Analyzer is a development of Leeds & Northrup Company, Department CP, 4934 Stenton Avenue, Philadelphia 44, Pennsylvania . . . or for more information about this development, reader may simply check CP 8377 on convenient information request slip between pages 2 and 3.)

Table shows scope of recorders

Applicability table outlines a variety of electrical and mechanical phenomena that can be recorded by manufacturer's direct writing recorders. Transducer data and examples or comments are included for recording applications such as stress and strain, vibration, pressure, velocity, torque, flow, tension, current and voltage, and several similar variables.

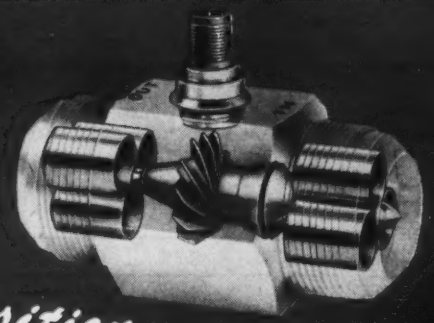
Performance data and specifications are listed for various components. Circuit diagrams and photos illustrate interchangeability of the amplifiers and preamplifiers in one, two and four channel systems. Bul 22M is issued by Sanborn Co., Dept. CP, 38a Osborn St., Cambridge, Mass. When inquiring be sure to specify CP 8378 on handy Reader Service slip between pages two and three.

For more information on product at right, specify CP 8379 . . . see information request blank between pages 2 - 3.

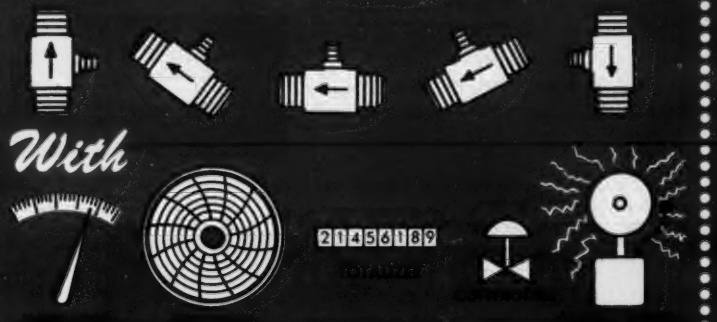
Potter OFFERS A NEW WAY TO MEASURE Flow

LINEAR • ACCURATE WITHIN ½% • EASILY INSTALLED • OPERATES TO 35,000 PSI
HANDLES ACIDS, CAUSTICS, SUSPENSIONS AT HIGH OR LOW TEMPERATURES

You Install This POTTER SENSING ELEMENT



In Any Position



With

POTTER *gives you these* **FEATURES:**

The Potter Flow Sensing Element is inherently linear and is accurate within ±½% over the recommended range. It can be built of any [illegible] magnetic materials for resistance to acids, caustics and corrosive materials.

[illegible] will operate at extreme pressures—as high as 35,000 psi; and is quickly and easily installed in any size [illegible] piping . . vertically, horizontally or at an angle.

Rangeability is as high as 20-to-1, while the pressure drop through the unit is usually [illegible] psi at maximum flow. The [illegible] over which the system will operate is −450° to +1200°F. Flow is measured in either weight or [illegible]

Instruments available include rate indicators, various types of recorders incorporating electric or pneumatic control forms, or both, for ratio or adding control. High accuracy is obtained with totalizing systems, which can be supplied to automatically start and stop flow from as many as three separate sources for batch mixing applications.

WRITE FOR INFORMATION to learn how this new method of measuring flow can be used to solve your metering problems.

POTTER AERONAUTICAL CO. 87 Academy St., Newark N. J.

BENDIX FRIEZ

Just right for your job!

high-precision thermistors
by **BENDIX-FRIEZ**

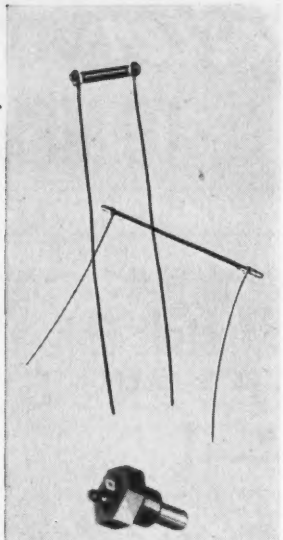
As temperature measuring elements and liquid level sensors, these temperature responsive resistors are the best you can buy. In standard or special types, their high-precision manufacture makes them precisely right for your job when it comes to resistance values, size, temperature coefficient, mountings and quality. Ask us about applications.

STANDARD TYPES FOR IMMEDIATE DELIVERY

Size (inches)	@ +30°C.	@ 0°C.	@ −30°C.
.140 x .75	45.0 ohms	86 ohms	194 ohms
.040 x 1.5	12,250 ohms	26,200 ohms	65,340 ohms
.018 x 1.5	35,000 ohms	82,290 ohms	229,600 ohms

Write for information about Bendix Friez Weatherman lobby installations.

FRIEZ INSTRUMENT DIVISION of . .
1450 Taylor Avenue, BALTIMORE 4, MARYLAND
Export Sales: Bendix International Division
72 Fifth Avenue, New York 11, N. Y.



Used in this typical application for sensing the temperature of hydraulic oil.

Bendix AVIATION CORPORATION

When inquiring check CP 8380 on handy form, pgs. 2-3

Which butterfly valve better meets your needs?

In either of these or any other valves, manual or automatic, which W. S. Rockwell builds for your exact needs, you're sure to get the right type and size to best meet the conditions of operating pressure, temperature and nature of fluid handled, whether it be air, gases, water, liquid or semi-solid chemical materials.

It will pay you to learn how Rockwell Valves can meet your plant's flow control requirements.

Rockwell stainless steel valve; with air cylinder operator and valve positioner; for throttling gases at 1200° F.

Rockwell heavy duty valve for 50 p.s.i. working pressure; has a replaceable rubber liner for valve body and stainless steel blade; with a motor operator and handwheel declutching unit.

ROCKWELL Valves

Write for Valve Catalog

W. S. ROCKWELL COMPANY

BUTTERFLY VALVES • SLIDE VALVES • AUTOMATIC VALVES

2203 Eliot Street • Fairfield, Conn.

When inquiring check CP 8381 on handy form, pgs. 2-3

Position of rotating shaft converted to digital reading . . .

analog-digital converter handles 3000 digits every second with shaft speed of 18,000 rpm

Any varying dimension, function, or value, such as the distance between two points, a temperature, etc which can be resolved into a shaft position analog can be converted into digital form by this instrument. Input is rotational position of shaft, output is an electrical contact setting through which readout, recording, or controlling devices can be actuated. Output setting is unambiguous, making device suitable for punching cards or tape and automatic tabulating equipment.

Important feature of the unit is a solenoid contact retractor which separates contacts from brushes during rotation of input from one angular position to another. Immediate effect of this separation is to provide low torque-to-drive and vast reduction of contact and brush wear.

Standard production models normally operate at 18,000 rpm or higher. This corresponds to 3000 digits per second. Torque required to start rotation is approximately 0.005 inch-ounce. Standard models have 3, 4, or 5 decades. Six decades or more can be furnished.

Analog-digital converter is miniaturized for measuring only 5 x 5 x 1⅛ inch thick. This includes contact-retracting solenoid. Weight of unit is slightly over 2 lb.

(Digitizer is a product of Coleman Engineering Company, Dept. CP, 6040 W. Jefferson Blvd., Los Angeles 16, Calif. . . . or for more information check CP 8382 on handy Reader Service slip between pages 2 and 3.)

Set zero of draft gage in one operation with no help . . .

3-way vent allows operator to shut off gage and open to atmosphere from front

Uses: Indicate low draft and differential pressures in the composite range from 0.2 to 120 inches of water.

Features: By means of three-way atmospheric vent, operator can set zero from front of instrument in one operation. Vent can be reached from under gage face while operator stands in front of gage checking alignment for zero when vent is open to atmosphere.

Description: Basic operating mechanism of draft gage consists of a diaphragm enclosed in a cast metal housing. Force and movement of diaphragm is balanced against force of calibrating springs. Resultant movement of diaphragm is transmitted through linkage to the pointer indicating magnitude of draft, pressure, or differential.

From one to twelve units can be mounted side by side in a single case. Gage design permits four types of mounting to meet requirements of individual intallations: semi-flush mounting,

PALMER
MERCURY ACTUATED
Temperature Indicating Instruments

4½" DIAL THERMOMETERS

Made in 3 types to suit any requirements. Rigid stem, wall or flush mounted, 11 inches of scale reading. Interchangeable with standard industrial separable sockets. Stem can be placed at any angle and case can be rotated to any readable position.

RECORDING THERMOMETERS

Twelve inch die-cast aluminum case with black or white wrinkle or satin finish. Single or multiple pen construction. Electric or spring wound clock, 24 hour or 7 Day Revolution. Flexible Armor and bulb of stainless steel. Ranges —40 +950°F or Equivalent in °C.

INDUSTRIAL THERMOMETERS

Red-Reading Mercury —Extruded brass case — chrome finish. Ranges —40 + 950°F or Equivalent in °C.

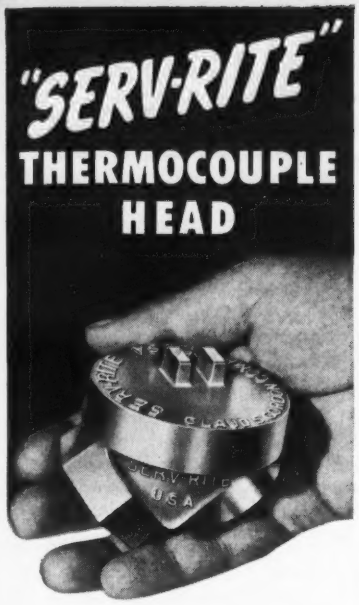
RED-READING MERCURY LABORATORY THERMOMETERS

Thoroughly annealed for permanent accuracy. Complete line A.S.T.M. and fractional division types.

FOR COMPLETE INFORMATION WRITE FOR CATALOG 200 G

PALMER
THERMOMETERS, INC.
Cincinnati 12, Ohio • MElrose 1500

When inquiring check CP 8383 on handy form, pgs. 2-3



the head that's ahead in every way . . .

This new "Serv-Rite" thermocouple head is actually small enough to be held comfortably in the palm of your hand. But size is only one of the many features that make this thermocouple head really extraordinary. It is loaded with installation and service conveniences that any user of thermocouples will appreciate at once.

The body is of malleable iron, cadmium plated for durability. A new type friction lock assures easy removal or tightening of the cap — a quarter turn does it. An asbestos gasket makes the head dirt- and moisture-proof. With a choice of ½", ¾", or 1" IPS opening for the protecting tube, you can standardize on one style head.

The connector block is of a material especially selected to withstand, without damage, temperatures up to 900° F. in continuous service. Improvements over the conventional type of inserts greatly simplify the making of the lead wire connections. The complete thermocouple element, including connector block, can be easily withdrawn for inspection.

Install a "Serv-Rite" thermocouple head and see for yourself how much better it really is.

Write for complete details

4421

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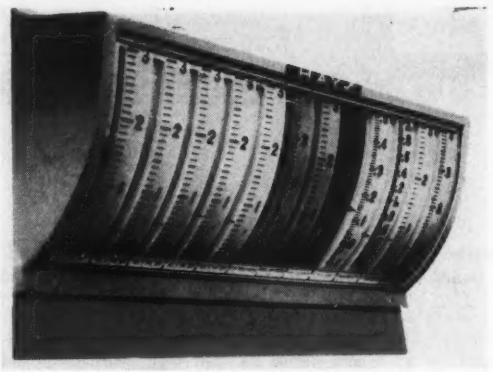
CLAUD S. GORDON CO.

Manufacturers · Engineers · Distributors

Thermocouples & Accessories • Temperature Control Instruments • Industrial Furnaces & Ovens Metallurgical Testing Machines

Dept. 19, 3000 South Wallace St., Chicago 16, Ill.
Dept. 19, 2035 Hamilton Ave., Cleveland 14, Ohio

When inquiring check CP 8384 on handy form, pgs. 2-3



Scale-pointer alignment prevents parallax

recessed mounting (for above eye level reading), eye level mounting, and projected or lug mounting.

Access door to vents is held closed by small magnets. No latches or handles protrude. Each unit is equipped with three-way atmospheric vent cock which shuts off unit and opens it to atmosphere. Test fitting provides easy connection to test gage without disconnecting it from piping. Scale and pointer are designed to align (in the same plane) eliminating parallax.

Scales are background lit with fluorescent lighting for high visibility. Case is dust tight, though individual gages can be removed and piping is not interconnected. Units can be moved forward by means of sliding rails for inspection without removal.

Diaphragms are reported to withstand 100% over pressure without injury to gage.

(Vertiscale draft gage is a development of The Hays Corp., Dept CP, Michigan City, Indiana. . . . or for more information about this development reader may simply check CP 8385 on handy form, pages 2 and 3.)

Technical report outlines operation of electro-mechanical integrator

General description, principle of operation, input requirements, and other applicable information on manufacturer's electro-mechanical integrator are included in 5-page publication. Research and industrial applications for instrument include integration of stress-strain curves, analysis of graphical data, continuous process weighing, and moisture determinations.

Circuit diagram illustrates the complete mechanism of integrator, which has an integrating rate of 5000 counts per minute for full scale input. Its frequency response ranges from 0 to 5000 cps and both linearity and calibration accuracy are reported to be 1.0% or better. "The Instron Integrator" is issued by Instron Engineering Corp., Dept. CP, 2 Hancock St., Quincy 71, Mass. When inquiring specify CP 8386 on handy form between pages 2 and 3.

MORE COST-SAVING ADVANTAGES

with

BARTON FLOWMETERS

The important difference lies in BARTON'S PATENTED* DUAL *RUPTURE-PROOF* BELLOWS PRINCIPLE

The Barton patented* Meter Body (see cutaway) eliminates all the principal sources of costly and troublesome flow measurement problems. You can throw away your mercury type meters...*actually save money by installing Barton Flowmeters.*

Barton dual stainless steel bellows are *rupture-proof.* Over-range damage is eliminated. The Barton actuating element is more compact and rugged, yet highly sensitive, insuring a long life of sustained accuracy with response that is virtually instantaneous.

Pulsation dampener, adjustable externally, controls rapidity of instrument response, eliminates pen flutter. Torque tube drive insures absence of leakage and friction for life of the meter, providing permanently a high degree of accuracy and sensitivity. The meter is completely self-draining or venting, eliminating the need for seal pots when measuring wet gases.

Thousands of Barton instruments are now employed throughout industry, solving measurement problems by combining top performance with cost-cutting efficiency. Write for complete information today...request Barton Bulletin 11C-4.

PRECISION-ENGINEERED FOR

. . . faster response
. . . sustained accuracy
. . . lowest maintenance

★

COST-REDUCING FEATURES...

- No Mercury
- No Seal Pots
- No Leveling
- No Cleaning
- No Over-range Damage

for measuring

FLOW • LIQUID LEVEL • DIFFERENTIAL PRESSURE

*Pat. Nos. 2400048, 2500360, 2590324, other patents pending.

BARTON INSTRUMENT CORPORATION

1437 SO. EASTERN AVENUE, LOS ANGELES 22, CALIFORNIA

When inquiring check CP 8387 on handy form, pgs. 2-3

AGILENE

AGILIDE

The Most Economical Answer

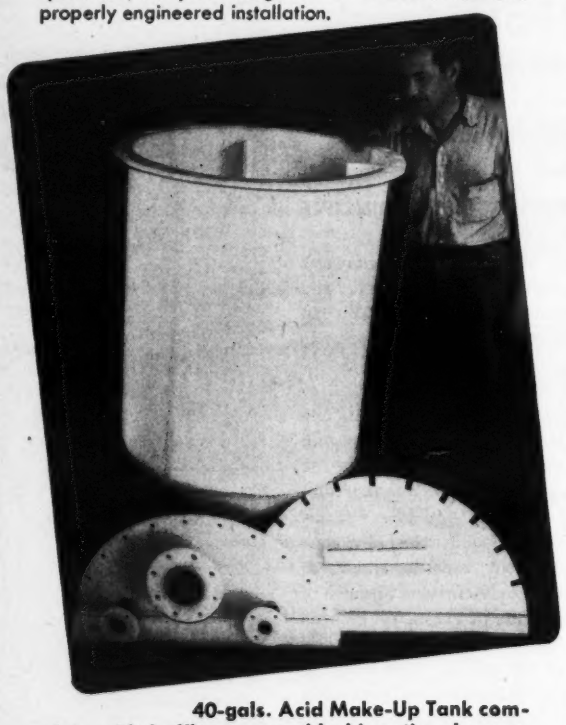
TO YOUR

CORROSION PROBLEMS

IN

CHEMICAL PROCESS EQUIPMENT

Agile's high-grade thermoplastic construction materials —AGILENE and AGILIDE—fabricated by a combination of forming and welding processes in which we specialize, are your safeguard for an economical and properly engineered installation.



40-gals. Acid Make-Up Tank complete with baffles, removable bi-sectional cover, and fittings, fabricated throughout from AGILENE.

SEND YOUR INQUIRIES TO

AGILE PLASTICS

American Agile Corporation

Plant and General Offices • 5461 Dunham Rd., Maple Heights, Ohio

Mailing Address, P. O. Box 168 • Bedford, Ohio

DEPT C-1

When inquiring check CP 8388 on handy form, pgs. 2-3

Expanding Chemical Production

Freeport takes another step in sulfur — its fourth in two years

Freeport Sulphur Company has announced plans for a new sulfur mine — the firm's fourth new sulfur project in two years — at a salt dome deposit in the Louisiana marshland.

The dome, known as Chacahoula, is located in Lafourche Parish 8 miles southwest of the town of Thibodaux, and 60 miles west of New Orleans. Freeport has been conducting an extensive drilling program there since last April.

Freeport's Bay Ste. Elaine mine on the Louisiana coastline southwest of New Orleans began production recently. Garden Island Bay, located at the mouth of the Mississippi river, and the company's other new project, Nash in Texas, are in the process of construction.

Expect on-line operation in autumn of chlorine-caustic soda plant

A chlorine-caustic soda plant now under construction for Solvay Process Div., Allied Chemical & Dye Corp. near Moundsville, W. Va. is expected to be completed and ready for operation late this fall.

Nonyl phenol production unit in Texas is on-line

Jefferson Chemical Co., Inc. has announced the start of a new general purpose chemical process unit at its Port Neches, Texas plant with nonyl phenol as its initial product.

The chemical is used as an intermediate in manufacture of non-ionic surface active agents, rubber chemicals, and lubricating additives, and as a starting material in preparation of certain resins and plasticizers.

Gulf Oil and B. F. Goodrich Co. form petrochem firm

Gulf Oil Corp. and the B. F. Goodrich Company have established the Goodrich-Gulf Chemicals, Inc., for the purpose of exploring projects in the petrochemical field. The head office will be in Pittsburgh. A plant site for the new company is being obtained at Orange, Texas. Stock ownership will be held equally by the parent organizations.

Set '54 deadline for completion of new phenol facilities

A new plant now under construction on an 86-acre site near Avon, Calif., for Monsanto Chemical Co. for manufacture of phenol is expected to be in operation in early 1954. Jointly built and operated by Monsanto's Western and Organic Chemicals Div., the new plant will be the company's largest manufacturing unit on the West Coast.

First shipment made from Texas plant for acrylonitrile

An initial shipment of acrylonitrile, used in making of acrylic fibers, has been made recently from the Monsanto Chemical Company's Texas City, Texas plant. The first tank car of acrylonitrile to leave the plant was shipped to Chemstrand Corp. at Decatur, Ala.

The material is produced by the firm from acetylene. New facilities at the plant produce acetylene from natural gas, rather than by the conventional process from calcium carbide.

Ammonium nitrate production plant gets Louisiana site

Construction is now underway in Sterlington, La. on a one-story building for manufacture of ammonium nitrate by the Commercial Solvents Corp. The 16,000 sq ft plant is expected to be completed this month.

60,000 bpd refinery distillation unit will be erected in summer

Esso Standard Oil Co. has awarded the contract for a 60,000 bpd crude distillation unit at its Bayway, N. J. refinery.

This addition to the company's production facilities is scheduled for erection early this summer.

Research for Minnesota M&M gets $3 million addition

Purchase of a 125-acre tract at St. Paul, Minn. as part of a long-range program for research purposes and involving expenditure of $3 million for

the firm's laboratory of the central research department has been announced by the Minnesota Mining & Manufacturing Co.

Construction of the unit will begin this spring, while completion is expected by the fall of 1954. Plans call for housing many of the firm's major research projects on the tract, located at Highway 12 and East Ave.

Titanium sponge production gets boost in Delaware

Expansion of Du Pont's titanium sponge producing facilities is now underway at its Newport, Del. plant and is scheduled to begin shortly at its Edge Moor, Del. plant also.

This expansion, undertaken at the request of the government, will yield an estimated 13,500 additional tons of titanium sponge during the next five years.

Work on new units to be erected at the Newport site is expected to be completed around the middle of 1954. No new buildings are planned at the Edge Moor plant. Construction, which will start in the near future, will consist mainly of additions to existing structures.

Refining firm plans $1 million plant for 2500 bpd production

A $1 million "cat-forming" plant for producing high octane gasoline at the rate of 2500 bpd is being built for the United Refining Company at Warren, Pa. With the new "cat-former," the company plans to raise its gasoline production to 3500 bpd — double its present output. The new facilities are expected to be in operation sometime this year.

Wyoming refinery will process 6000 bpd crude oil

Sinclair Refining Company is proceeding with additions to the Sinclair, Wyoming refinery which will permit complete processing of some 6000 barrels of additional crude per day. It is expected that the new facilities will be completed early in the summer of this year.

More ethylbenzene, other coal tar products slated for '53

Production from new and expanded installations for ethylbenzene and other coal tar products of Koppers Company, Inc. is expected to be in full swing early this year, it is announced.

From the company's Chemical division plant near Port Arthur, Texas the ethylbenzene will be shipped

(Continued on next page)

The Answer to your toughest tank lining problems

TYGON
flexible – plastic
•
TOPS IN CORROSION-RESISTANCE

PROVEN in hundreds of the toughest possible applications during the past fourteen years, flexible Tygon plastic linings offer more value today than ever before.

Greater toughness — more stability — even longer life. These improved performance characteristics stem from improved manufacturing techniques, resulting in a denser, more homogeneous body. Top quality yesterday, Tygon is an even better material today.

And along with improved quality — application methods have been simplified. Application is no longer a "factory" must. Strategically located Tygon licensed applicators can now install Tygon linings quickly and economically. Coupled with lower applied costs are important savings in freight costs — and vitally important savings in time.

For that next "tough" tank lining problem — ask for, insist on — Tygon.

This new booklet tells the "down-to-earth" facts about Tygon. Where and how to use it. When not to use it. A valuable reference for every engineer faced with corrosion problems. Free on request. Write for your copy today!

Address: Plastics & Synthetics Division, The U. S. Stoneware Co., Akron 9, Ohio.

U. S. STONEWARE
AKRON, OHIO

When inquiring check CP 8389 on handy form, pgs. 2-3

A message of special significance to filter users everywhere

Effective January 1, Niagara Filter Corporation became a part of American Machine and Metals, Inc.

Production will be transferred gradually from the present Niagara Filter plant at Buffalo, N. Y., to the 83-acre AM&M plant at East Moline, Illinois. Engineering, sales and service headquarters will remain at the Buffalo address until further notice.

Niagara engineering, sales and service policies remain unchanged. Service to present Niagara customers, and new customers, will of course be maintained without interruption.

Why you'll get

BETTER FILTRATION

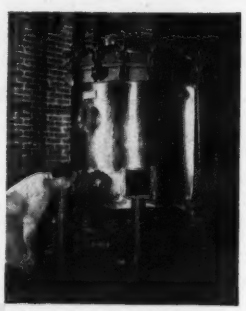
now that NIAGARA FILTER is a division of AMERICAN MACHINE and METALS, INC.

You have a large "plus" to gain from the new Niagara Filter administrative and manufacturing set-up.

First and foremost, you'll get the same high calibre of engineering service as always; the same unique background of experience in filtration, applied to your specific production needs.

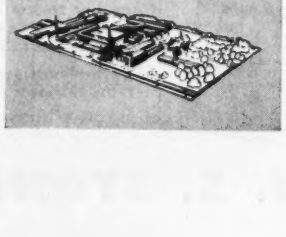
Second, your new Niagara Filter will be better built than ever before. Niagara engineers and production men are now working with vastly improved manufacturing tools. They are already drawing upon the resources and skills of the AM&M production staff—backed by large, modern plant facilities that greatly simplify the job of building the *right* filter for your operations.

Third, you'll get faster service. Your order will get into production days, even weeks earlier than heretofore possible. You'll enjoy, that much sooner, the unusual labor and upkeep savings which Niagara Filters make possible in processing plants everywhere.



VERTICAL—for liquid clarification.

HORIZONTAL—for clarification and solids recovery.



NEW HOME of Niagara Filters will be this modern 83-acre AM&M plant on the Mississippi River at East Moline, Illinois.

Niagara Filter **DIVISION**

AMERICAN MACHINE and METALS, INC.

SALES AND ENGINEERING OFFICE:

3083 Main St., Buffalo 14, N. Y.

(Please address correspondence to above address)

FACTORY: East Moline, Illinois

When inquiring check CP 8390 on handy form, pgs. 2-3

EXPANDING PRODUCTION

to its Kobuta, Pa. plant for use in making styrene and polystyrene plastic molding compounds.

At Fontana, Calif., the new plant of Koppers Tar Products Division will be in full production during the first quarter and with the output consisting of coal tar pitch roofing, pitches, and other coal tar products, in addition to coal-tar-base pipe coatings. The firm reports that 918 of 1110 coke ovens are scheduled for completion during the year, and a battery of nine open hearth furnaces will be placed in operation.

Arkansas alumina production gets $5 million spurt

Plans for a major addition, estimated in excess of $5 million, have been announced for the Aluminum Ore Company's alumina works at Bauxite, Ark. The new facilities would be for manufacture of finished chemical products from alumina processed from bauxite mined in Arkansas. Construction and production of the proposed plant are contingent on government authorization.

Fertilizer plant for Indiana has deadline this fall

Plans for construction of a $1 million fertilizer plant, to be completed in the fall of this year, have been announced by the Davison Chemical Corp. of Baltimore, Maryland.

The new unit will be on a twenty acre tract at the northern city limits of New Albany, Ind., between Grant Line Rd. and the Monon Railroad. Erection of this plant is necessary, the company said, because the newly-constructed Ohio River Levee does not protect the present plant, located on the north bend of the river at Tenth and River Streets.

Liquid oxygen installation aims for '54 goal

Air Reduction Sales Company will soon begin construction of a new liquid oxygen plant and 70-acre site in Riverton, N. J., ten miles northeast of Camden. The new plant, which is scheduled to begin production next year, will primarily serve the Delaware River Basin industrial area. In addition to oxygen, the plant will also produce nitrogen and argon.

Lanolin (& derivatives) production gets new impetus

Construction of a new manufacturing unit to cost approximately $170,000 is now underway at the Mamaroneck, N.Y. plant of the Robinson-Wagner Company, producers of lanolin and lanolin derivatives.

The new addition, scheduled for completion and operation in May of this year, will include complete

facilities for esterification, high vacuum distillation and condensation reactions, involving the synthesis of a series of the firm's new products.

Zirconium, hafnium metals will be produced commercially

A $2.5 million plant, the first to produce zirconium and hafnium metals commercially, is now being constructed for the Carborundum Metals Company, Inc., at Akron, N.Y. Plans call for operation of the new plant in July of this year.

The firm, a new subsidiary of Carborundum Company, has signed a five-year contract with the Atomic Energy Commission for annual delivery of 150,000 lb of the metals from the new unit.

$19.5 million expenditure will net 300,000 tons soda ash yearly

A $19.5 million soda ash plant for production of refined, pure soda ash at a rate of about 300,000 tons annually is expected to be operating early this year at Westvaco, Wyoming by the Intermountain Chemical Co.

Tests have been completed on some of the units in the reduction center for changing trona rock into the refined product. The process, using coal mining methods, will require 600,000 tons of the rock annually.

$12.410 million plant investment takes Davison into triple super

Early 1954 operation is expected of the $12,410,000 production of triple superphosphate which the Davison Chemical Corp., is now constructing at Bartow, Fla.

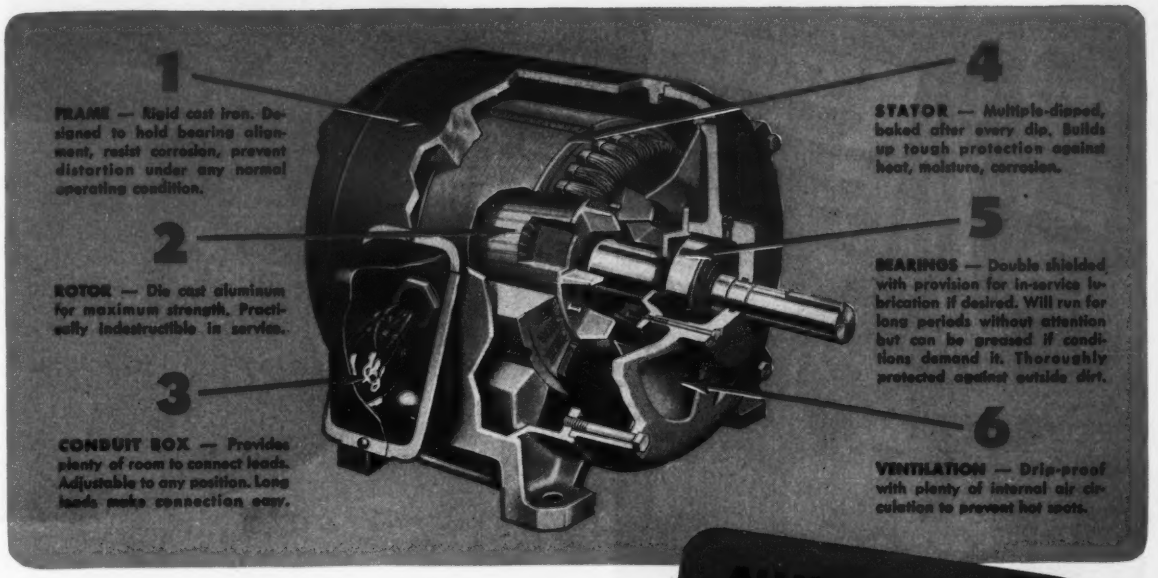
The new plant, which will have an annual capacity of 200,000 tons of the agricultural chemical, marks Davison's entry into triple superphosphate production and establishes the firm as a major producer of the industry. Total capacity in the industry is currently estimated at 770,000 tons annually.

Plant for amino acid synthesis will have Texas site

Construction of a plant for synthesis of methionine, an amino acid used as a poultry feed supplement, will begin early this spring as the first of Du Pont Company's manufacturing units to be located at the firm's site near Beaumont, Texas.

Cost of the initial installation is estimated at approximately $4 million. It is expected to get into full production late in 1954. The company is also planning other manufacturing facilities on the site, four miles southeast of Beaumont.

Look for These 6 Signs of Good Motor Design


1
FRAME — Rigid cast iron. Designed to hold bearing alignment, resist corrosion, prevent distortion under any normal operating condition.
2
ROTOR — Die cast aluminum for maximum strength. Practically indestructible in service.
3
CONDUIT BOX — Provides plenty of room to connect leads. Adjustable to any position. Long leads make connection easy.
4
STATOR — Multiple-dipped, baked after every dip. Builds up tough protection against heat, moisture, corrosion.
5
BEARINGS — Double shielded with provision for in-service lubrication if desired. Will run for long periods without attention but can be greased if conditions demand it. Thoroughly protected against outside dirt.
6
VENTILATION — Drip-proof with plenty of internal air circulation to prevent hot spots.

Get Allis-Chalmers Motors for these Extra Values!

ALLIS-CHALMERS MOTORS

Certified Service — Nearly 100 Allis-Chalmers Certified Service Shops provide factory-approved parts and service on your Allis-Chalmers motors. Screened for modern equipment, adequate experience and business integrity, these independently owned service shops will provide you with prompt, economical repair and maintenance.

Complete Drives from One Source — Allis-Chalmers can supply your complete drive — motor, control and *Texrope* V-belt drive — from one convenient, reliable source.

Application Engineering — Your Allis-Chalmers District Office representative or Authorized Dealer will be glad to help you select exactly the right motors for your needs. For additional information, write Allis-Chalmers, Milwaukee 1, Wisconsin, for Bulletin 51B6052. A-3954

Texrope is an Allis-Chalmers trademark.

Sold . . .
Applied . . .
Serviced . . .

by Allis-Chalmers Authorized Distributors, Certified Service Shops and Sales Offices throughout the country.

CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.

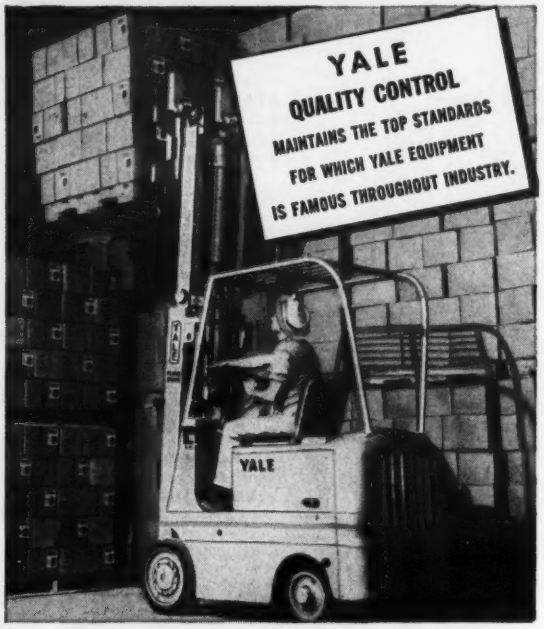
TEXROPE V-belts in all sizes and sections, standard and *Vari-Pitch* sheaves, speed changers.

PUMPS — Integral types from ¾ in. to 72 in. discharge and up.

ALLIS-CHALMERS

When inquiring check CP 8391 on handy form, pgs. 2-3

Again in '53
YALE
sets the pace



Give this great YALE truck every test you know. Run it fully loaded on ramps, indoors and out. See the power it delivers...the fuel economy it gives. Let operators test it for smoothness...for maneuverability...for safety ...for features...and you'll see why it's the standout truck of this or any other year.

YALE* *MATERIALS HANDLING EQUIPMENT*
**Registered trade mark*

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The YALE & TOWNE Manufacturing Co., Dept. 123
Roosevelt Blvd. and Haldeman Ave., Phila. 15, Pa.

☐ Please send me *The Picture Story of Yale Materials Handling Equipment*
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In Canada write: The Yale & Towne Mfg. Co., Box 337—Postal Station "A"—Toronto

Gas and Electric Industrial Trucks • Worksavers • Hand Trucks
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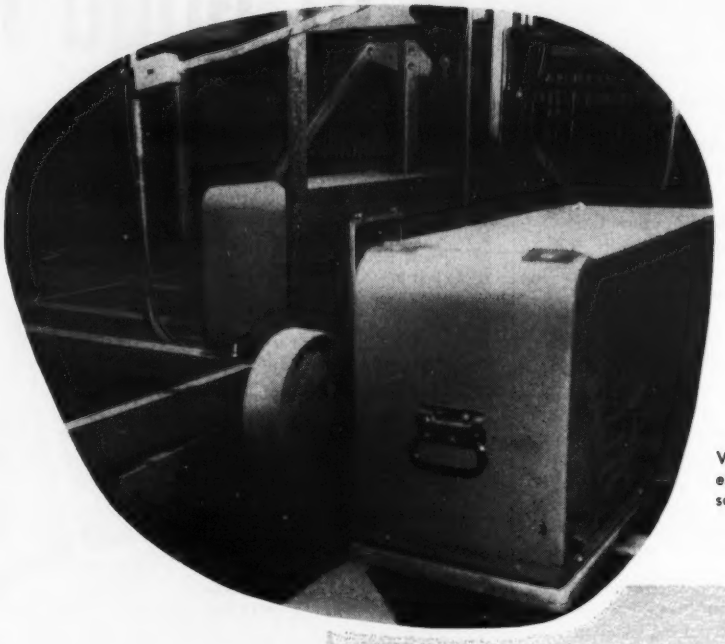
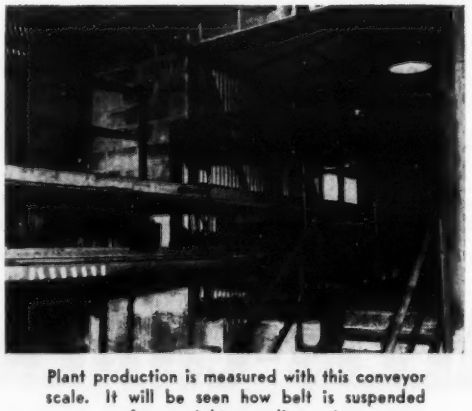
material handling



Without the aid of an operator, these two conveyor scales can handle a total of 200 tons per hr

Fast, Accurate Weighing Plays Major Role in Processing Copra, Soybeans for Oil



Plant production is measured with this conveyor scale. It will be seen how belt is suspended from weight-recording unit

Two compact conveyor scales each handle 100 tons per hr without operators, give readings instantly

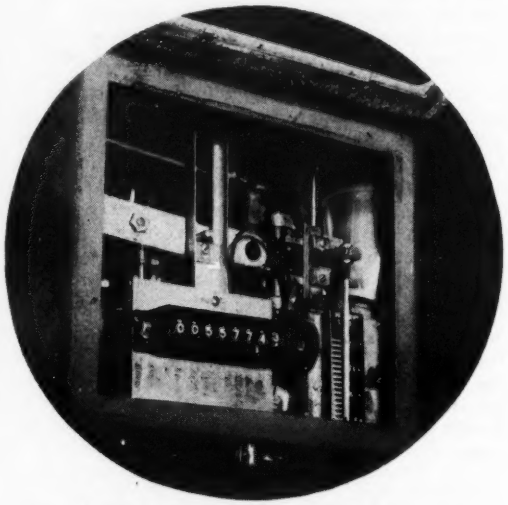
ACCURATE weighing of coconut meat during extraction of the oil is highly important, since weight on arrival is the basis for payment. (The copra sells from $200 to $300 a ton.) At the El Dorado Oil Works plant in Bayonne, N. J., largest crusher of copra in the U.S., speedy handling of the

product as it comes from the holds of sea-going vessels is also essential.

Average cargo handled is 1500 tons, although facilities at the 485′ pier can handle large freighters with cargos as large as 6000 tons of copra.

On the roof of the pier are two Sutorbilt cars which run on tracks the whole length. In each car are two 150 hp motors powering suction fans which draw the copra up from the ship holds and through a pair of 8″ hoses. The copra is then discharged by gravity through chutes spaced every 10′ along the top of the pier to a pair of long conveyor belts. Each belt extends 455′, is 24″ wide, ⅜″ thick.

The copra drops off the end of the big belts to a pair of shorter conveyor belts which carry the material past two Fairbanks-Morse conveyor scales.



Total weight of load being run can be read easily from dial while percentage of load being run at the moment can be seen just below the cone

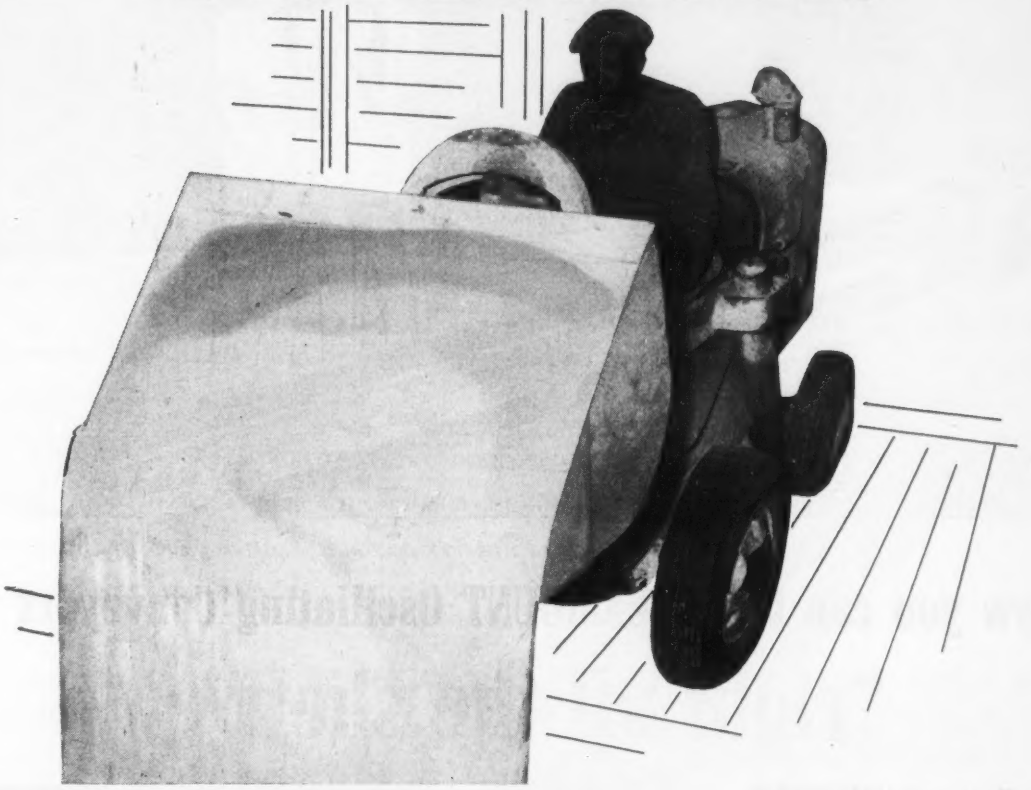
Each of the scales is capable of weighing 100 tons of material an hour and with sustained accuracy over a wide range of loads.

In contrast to the huge hopper scales used by the same firm at its Oakland, Calif. plant, conveyor scales are compact and of simple design. Rollers supporting one section of the small belt are suspended from the scale. Weight of the material carried by the belt causes the rim of a small wheel to move into a position on the face of an inverted cone, that corresponds to the weight of the material. The cone revolves in a definite ratio to the speed of the conveyor belt, and by friction drives a small wheel on which is located a contact.

Although the cone turns at a constant speed, the small wheel turns at varying speeds, depending on its position in relationship to the diameter of the cone which drives it. The more weight on the belt, the larger the diameter of the cone in contact with the wheel. The faster the wheel turns, the more contacts it makes and each contact represents a defi-

(Continued on next page)

PAYLOADER

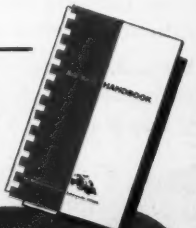


For Fast, Flexible **BULK-MATERIAL** *Handling!*

"PAYLOADERS" spell flexibility and low-cost in the handling of fertilizers, chemicals and other loose, bulk materials. And these tractor-shovels can go to work cutting handling costs *right away*. No expensive investment or plant rearrangement is required before you begin reaping "PAYLOADER" benefits. They travel swiftly indoors and out and maneuver in close quarters. They scoop-up, carry, load, dump, spread . . . lift and lower . . . push and pull. They load and unload boxcars of bulk. In fact, "PAYLOADERS" are being used for so many jobs in so many plants that they can probably cut handling costs for you too. Get all the facts from your "PAYLOADER" Distributor or write The Frank G. Hough Co., 744 Sunnyside Ave., Libertyville, Illinois.

FREE HANDBOOK

Tells how and where to look for signs of inefficient bulk-materials handling . . . how to analyze, organize and set up an efficient handling system. Plus many useful tables and data. Write for "Bulk Materials Handbook."



When inquiring check CP 8393 on handy form, pgs. 2-3

(Continued from preceding page)

nite amount of weight. Thus, the weight carried past the scale by the belt directly controls the speed of the weight recording wheel.

First major advantage of the conveyor scale was the saving in initial cost, installation and space. Also, the conveyor unit permits continuous operation without an operator in attendance, and gives instantaneous readings both on rate of flow and on total weight run.

Split lots are easily handled, for it is possible to take a reading at the end of one lot and start immediately to run the next lot. Power consumption is very low because the material is lifted only once to the top of the pier and is moved laterally and downward till it reaches the storage bins.

After the copra leaves the scales it moves past electromagnets which remove any iron particles. The material then goes into a hopper to drags which distribute materials in the two 6000 ton bins.

As required for processing, the copra is moved by screw conveyors, drag, bucket elevator and belt to a third conveyor-scale which discharges into a surge bin that feeds 13 expellers which crush the copra and remove most of the coconut oil. The third scale is used to provide immediate data on plant production. Additional oil is recovered from the copra by means of a solvent solution. The meal is bagged and sold; the oil is filtered and stored for shipment.

Soybeans are another product regularly processed at the plant. In order to use the same conveyor scales for weighing, a conveyor was installed inside the pier to raise the soybeans from the delivery trucks on the pier floor up to the big belts which feed the scales.

(Conveyor scales used at El Dorado are manufactured by the Fairbanks-Morse & Co., Dept. CP, 600 S. Michigan Ave., Chicago 5, Ill. . . . or for more information check CP 8395 on handy form, pages 2 and 3.)

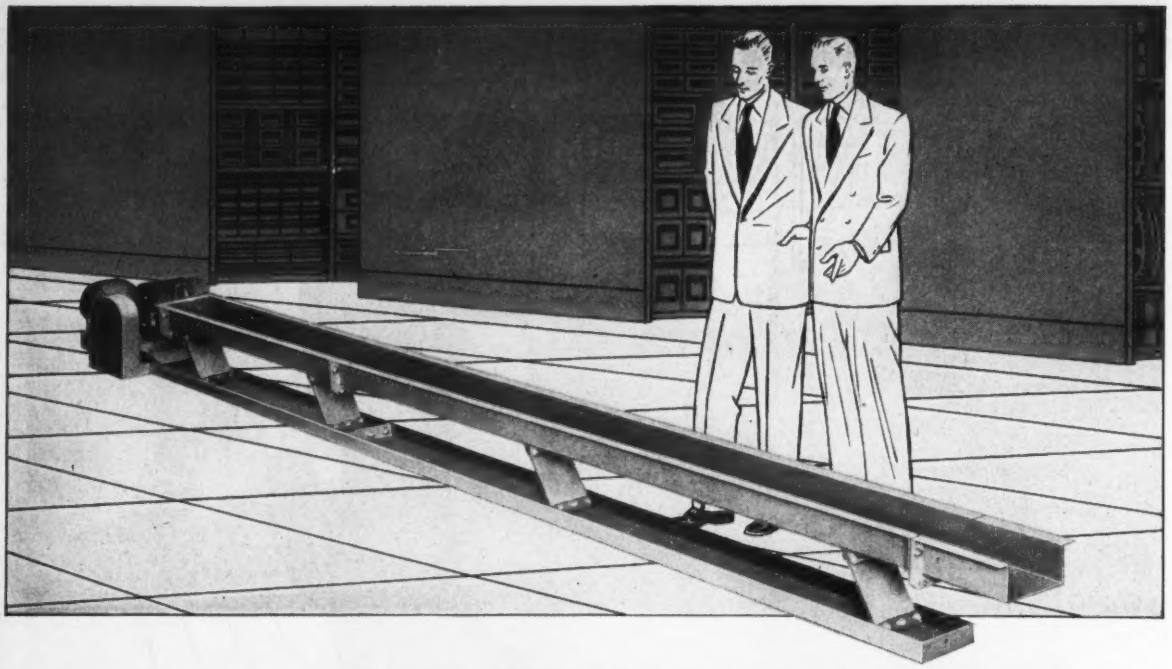
Hydraulic steering, pneumatic tires give smooth maneuvering to 10,000 lb loads . . .

unit designed for outside use can travel 17.8 mph, can be steered manually if motor fails

Uses: For heavy-duty tiering under difficult outdoor conditions, for handling building blocks, concrete and clay pipes, brick and tile, heavy metal products, lumber, and other materials involved in substantial outdoor storage operations.

Features: Hydraulic steering on pneumatic tired truck provides maximum operating ease in maneuvering 10,000 lb loads. In case of motor stoppage, steering can be accomplished manually.

Description: Yardlift-100 is powered by a Continental gas engine producing 55 brake power at 2000 rpm and a traveling speed of 17.8 mph. Unit turns in a 133″ radius. Standard overall height is 113″ with fork lowered, and 178″ maximum with forks raised to 144″.



Now you can buy FLEXMOUNT Oscillating Conveyors "right off the shelf"

Stock sections make FLEXMOUNT Positive-Action Conveyors easy to order...easy to install

Yes, you can now get FLEXMOUNT Oscillating Conveyors for immediate delivery from stock. There's no more waiting for special engineering—stock sections are easily built up to any length desired.

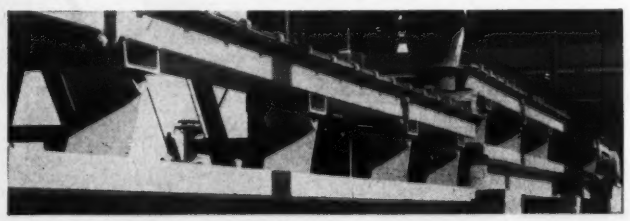
This off-the-shelf service applies to 8, 12 and 18 in. trough widths. For greater capacities, Link-Belt has heavy-duty designs. All offer lower handling costs . . . make many difficult conveying jobs practical for the first time.

Link-Belt test units and laboratory facilities are available for your use. Our engineers will be glad to demonstrate how FLEXMOUNT Oscillating Conveyors can serve your requirements.

Versatile, low-cost FLEXMOUNT Conveyors are easily kept clean, can be made dust-tight if desired. For all the facts, write for your copy of new Book 2478.

How Positive Action moves material...

Positive-action, constant-stroke eccentric drive provides a powerful, yet gentle upward and forward oscillating motion. Large volumes of material are moved in a uniform, continuous flow, regardless of surges. Natural spring action of resilient legs reduces power requirements to a minimum.



Note the compactness of this dust-proof enclosed FLEXMOUNT Oscillating Conveyor. All-metal trough is self-clearing.

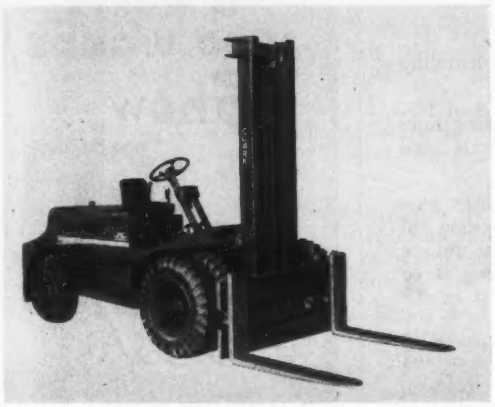
LINK-BELT

12,988

FLEXMOUNT OSCILLATING CONVEYORS

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities.

When inquiring check CP 8394 on handy form, pgs. 2-3



Designed for heavy-duty outdoors

Other features of the model are: honed cylinder surfaces for positive seal and long packing life; twin, double-acting tilt cylinders for smoother tilt action and greater upright stability; piston type construction of hydraulic system for reduced leakage and maintenance; rubber dust boots to protect cylinder rods; and heavy duty hydraulic brakes.

(Development of Industrial Truck Div., Clark Equipment Co., Dept. CP, Battle Creek, Mich. . . . or for more data check CP 8396 on form, pgs. 2-3.)

Scoop-truck combination speeds salt handling

Leslie Salt Company in Newark, Calif., has equipped an industrial truck with a special scoop for moving raw salt from storage piles to processing points. The scoop, stainless steel for this application, is revolved, raised and lowered by the truck operator in his position on the truck.

When necessary, scoop may be lowered flush with

Revolving scoop aids salt transit

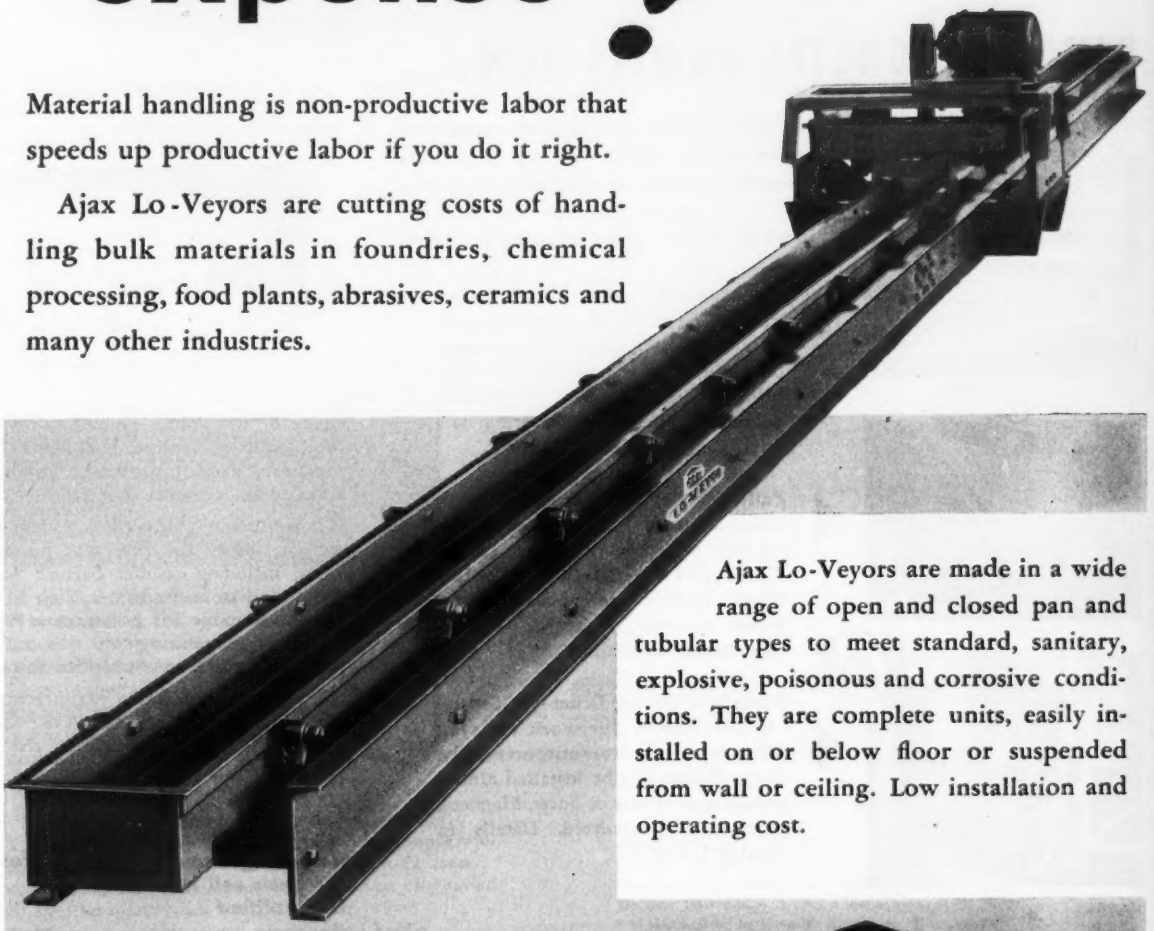
the ground to engage a load. Another advantage of the arrangement: scoop can reach over obstacles to discharge a load.

(Information courtesy of Dept. E, The Elwell-Parker Electric Co., Dept. CP, 4205 St. Clair Ave., Cleveland 3, Ohio.)

material handling expense ?

Material handling is non-productive labor that speeds up productive labor if you do it right.

Ajax Lo-Veyors are cutting costs of handling bulk materials in foundries, chemical processing, food plants, abrasives, ceramics and many other industries.



Ajax Lo-Veyors are made in a wide range of open and closed pan and tubular types to meet standard, sanitary, explosive, poisonous and corrosive conditions. They are complete units, easily installed on or below floor or suspended from wall or ceiling. Low installation and operating cost.

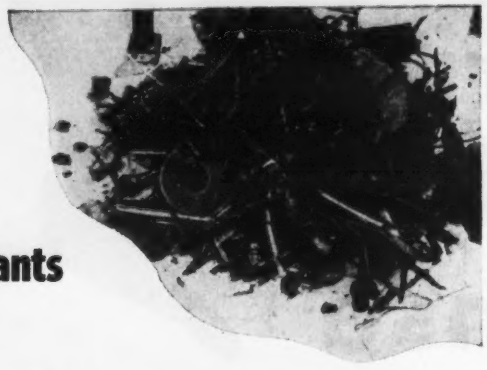
Write for your personal copy of Bulletin 39

AJAX

AJAX FLEXIBLE COUPLING CO. INC.

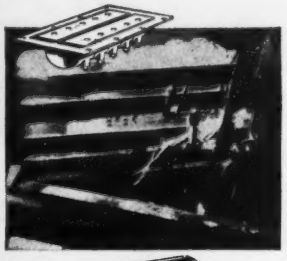
WESTFIELD, N. Y.

When inquiring check CP 8397 on handy form, pgs. 2-3

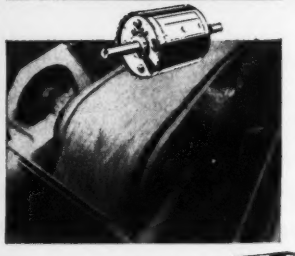


Here's why Processing Plants Need—

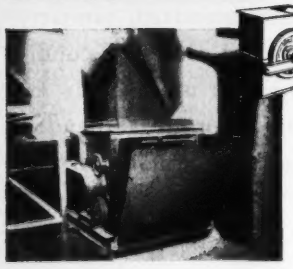
DINGS MAGNETIC PROTECTION...



THE junk above is an actual tramp iron accumulation removed by a Dings Magnet installed in a Wisconsin paper mill . . . a rough diet for pumps, screens, grinders and other equipment.



Look at the iron on this Dings Perma-Plate—a powerful non-electric magnet that can be installed in chutes, ducts, or above belts to remove iron from wood chips. Magnetic Permanence guaranteed forever. Engineering data in Catalog C-1205-A, write for it.



Fully automatic iron removal with a Dings Magnetic Pulley — used here as the head pulley on a chip belt. Iron is discharged separately from chips. Dings Pulleys are unbeatable for power, economy. Write for construction details, capacities.

Dings Non-electric Drum-type Separator installed in ductwork carrying chips separates iron automatically. Perma-Drums can be installed almost anywhere in chutes or ducts. Magnetic permanence guaranteed. Details in Catalog C-1100-A.

RM RECTANGULAR MAGNET

PRESSURE MAGNETIC HUMP

For removing iron from liquid lines, or chutes either the most powerful rectangular magnet made, Dings RM, or a Magnetic Hump equipped with two Dings Perma-Plates. Write for Bulletin 653, and see your Dings representative whatever your tramp iron problem may be.

DINGS MAGNETS

DINGS MAGNETIC SEPARATOR CO.

4731 W. Electric Ave., Milwaukee 46, Wis.

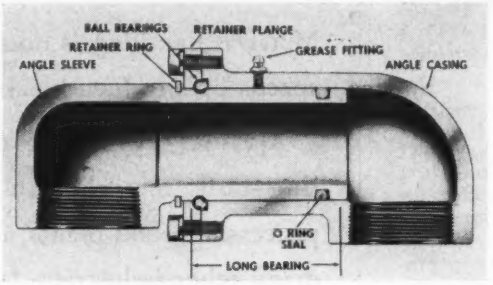
When inquiring check CP 8398 on handy form, pgs. 2-3

Ball bearing gives swing joint free and easy turning . . .

eleven different styles designed for handling oils, gasoline, other chemicals

Uses: For use on loading and unloading lines handling oils, gasoline, other chemicals and liquids.

Features: Long-lubrication ball bearings provide adequate support for piping; method of positioning bearings prevent them from falling out when joint is dis-assembled. Sealing is by means of an O-ring confined in a recess in the



Ball bearings won't fall out

sleeve of the joint. Special O-rings are provided for handling gasoline, fuel oil, other liquids and chemicals without softening, swelling or deterioration at any temperatures from −30 to +250°F.

Description: Offered in steel for heavy-duty service, joints are produced in eleven different styles, including counter balance and double-swing styles, and in four sizes: 2, 2½, 3, and 4″. Joints are also suitable for pressures as high as 1500 psi hydraulic, depending on size and service. All parts are readily accessible for inspection.

(Development of Barco Manufacturing Co., Dept. CP, 1801 W. Winnemac Ave., Chicago 40, Ill. . . . or for more information check CP 8399 on handy form, pages 2 and 3.)

Removing damaged battery covers for basic cell repairs is simplified . . .

lead posts remain upright after separating cell connector and cover

A simple procedure in removing or replacing damaged storage battery covers or for cell replacement or element repair has been suggested for battery maintenance men.

In removing a damaged cover of rubber jar batteries, it is necessary to drill out gaps between posts and inserts because post openings on batteries of this type are lined with lead inserts integral with the hard rubber cover, and because these lead inserts or linings are welded to the lead battery posts to prevent leaks.

By use of a special drill in the procedure (see Fig. 1) an annular hole is cut through the lead

This Picture IS WORTH 1000 WORDS! Show

to Your Drivers

WHEN IT COMES TO TRAINING industrial truck operators, one picture is worth a thousand words. Clark's new "Safety Saves" movie is the only driver safety-training film in the materials handling field. It's a 30 minute sound movie, filmed entirely "on-the-job", and it's available to you on a loan basis.

1. "It's fun to watch the scenery; it's *safer* to watch the road."
2. "All right then . . . you won't make that mistake again!"

You (and your drivers) will see hair-raising examples of how *not* to handle a fork truck, as demonstrated by Willie the Cowboy. After you've seen Willie's way, you'll see the safe, correct way to drive and take care of a truck. To help cut accidents and improve driver performance, *all* your drivers should see "Safety Saves". Use the coupon to indicate when you want it—the only cost to you is return postage.

CLARK ELECTRIC AND GAS POWERED FORK TRUCKS

AND POWERED HAND TRUCKS • INDUSTRIAL TOWING TRACTORS

INDUSTRIAL TRUCK DIVISION
CLARK EQUIPMENT COMPANY • Battle Creek 9, Mich.

Send "Safety Saves"; Date wanted_____
Alternate dates_____
Name_____
Firm Name_____
Street_____
City_____ Zone_____ State_____

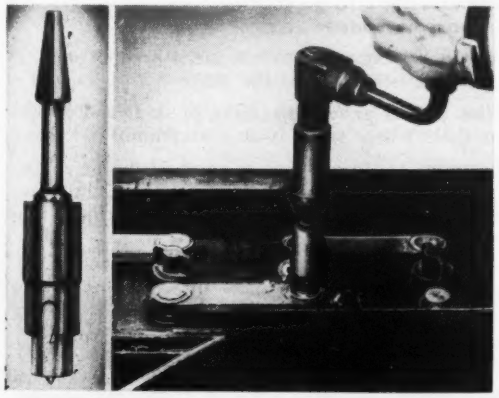
When inquiring check CP 8400 on handy form, pgs. 2-3

posts, permitting them to remain solid, upright, and of normal height after the cell connector and the jar cover have been separated.

The other technique is to drill a 15/16" hole through the posts in the damaged cover to a depth of 3/8". This technique frees the intercell connector.

Such drilling may then be continued through the cover to free it in turn. This latter technique requires rebuilding the posts before reassembly in a new cover to replace the broken one.

Rebuilding of posts is done by a simple lead "puddling", applying heat by a carbon electrode manipulated within the cavity of a simple post

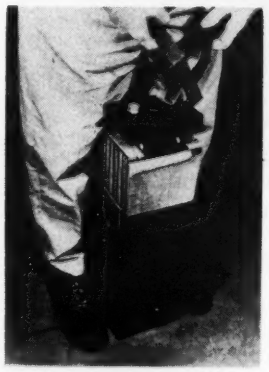


The tool — Its application

mold. Such post molds are available as purchased items if the maintenance man does not choose to make his own.

In certain battery designs there is sufficient clearance between the inter-cell connector and top of the cover so that the first drilling may be eliminated by making a horizontal saw cut under the connector.

In cases where the cover is not damaged, but both cover and elements are to be withdrawn for the jar for basic cell repair, it is only necessary to remove the inter-cell connector and lift both cover and elements as a unit (Fig. 2). Note jar hold-down clips to which chains are attached. Repair man steps on chains to keep battery walls in place as cover and element are lifted. Lifting tool in this case is a post cutter with its cutting edges dulled.



Pulling the cover and element of a battery simultaneously

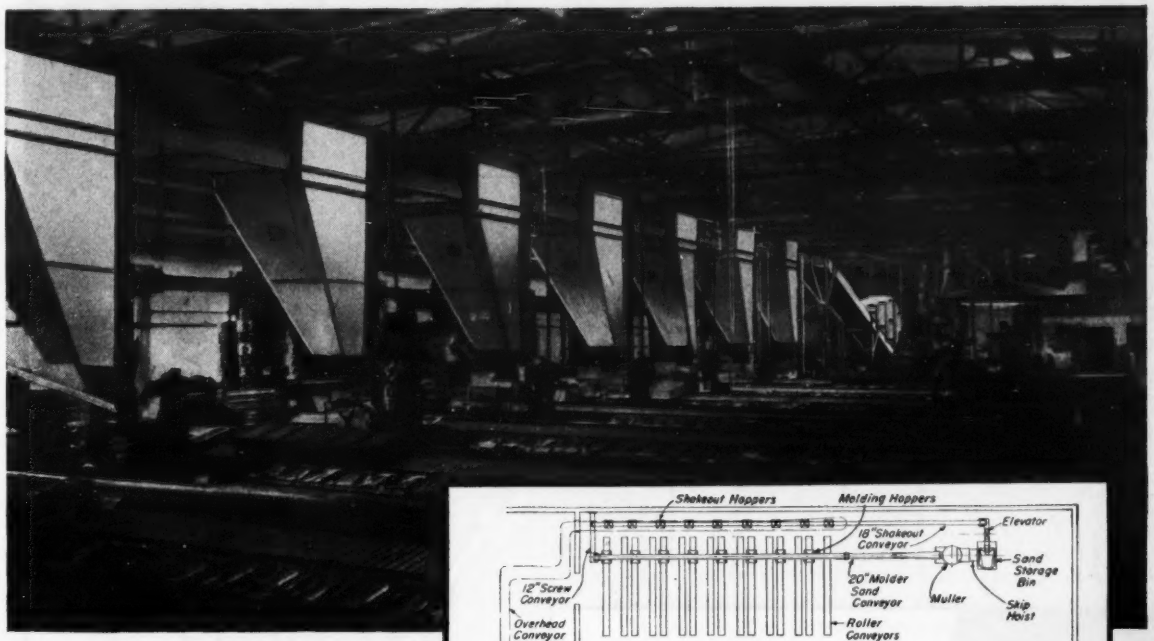
During such a repair it is not even neces-

(Continued on next page)

G-W *engineered materials handling*

8 WAYS BETTER

FOR CHASE BRASS & COPPER CO., INCORPORATED



In the foundry operation of Waterbury Manufacturing Co. — a division of Chase Brass & Copper Co., Incorporated — Gifford-Wood has engineered eight major improvements in the handling of molding sand, molds, and castings into the new materials handling system. These improvements, brought about by the G-W system include —

1. **Consolidation of two foundry rooms into one.**
2. **Higher production through more efficient space use.**
3. **One casting method replaces two formerly used.**
4. **Virtually all manual handling has been eliminated.**
5. **Casting quality has been increased.**
6. **Working conditions are considerably better.**
7. **Maintenance costs have been reduced.**
8. **Over-all production time has been cut sharply.**

This is but one of the more recent materials handling problems solved by Gifford-Wood. For more than 140 years, G-W has designed, built, and installed similar complete systems for nearly every industry in the book. This experience is at your disposal.

A 20"-wide overhead conveyor moves molding sand past molding hoppers where operators remove it as needed by a lever-operated diverting plate. A 12" screw conveyor transfers unused sand laterally to an 18" shakeout conveyor at which point used sand collected from the molders in shakeout hoppers is added. A bucket elevator then dumps it into a storage bin from which it is skip-hoisted to a muller for mixing with new sand. After aeration and cooling it is deposited on the original belt for re-use. Roller conveyors handle molds at molding stations, and castings move to finishing on overhead monorail conveyors.

For details on this and many other G-W installations, ask for Materials Handling Catalog.

When You Think of Materials Handling — Think of **GIFFORD-WOOD CO.**

Since 1814 • Hudson, New York

NEW YORK 17, N. Y. 420 LEXINGTON AVE. | ST. LOUIS 1, MO. RAILWAY EXCHANGE BLDG. | CHICAGO 6, ILL. 565 W. WASHINGTON ST.

8525

When inquiring check CP 8401 on handy form, pgs. 2-3

WHAT CAN YOU DO with Hapman TUBULAR CONVEYORS?

To show you graphically what Hapman Tubular Sealed-pin Chain Flight Conveyors *can do* — this "composite" conveyor includes 25 outstanding features. Naturally, no single application would — or could — utilize every feature.

Often a single advantage — like liquid-tight design — makes a Hapman uniquely capable of solving a problem. A few minutes' study of this composite may reveal a solution to one of *your* most perplexing materials handling problems. Jobs such as processing foods or chemicals while "en route" or elevating chips or sludge from a settling tank are examples.

Each Hapman Tubular Conveyor is engineered to individual requirements. Why not call your nearest representative for further discussion?

Write for descriptive Bulletin CP-353

Low H.P. motor drive — chain take-up may be combined.
Vibrator to discharge powders.
Easy to install — may support itself or hang from ceiling.
Volumetric feed control at discharge.
Roller turns for high load points — sharp corners.
All corrosion-resistant construction when required.
Oversize wiper or scraper flights for cleaning.
Chain parts replaceable — may be steel or spark-proof materials.
Flights of Neoprene, cast iron, fibre, plastic, bronze, etc.
Case-hardened bands are replaceable. Bends usually 6 times pipe diameter.
SEALED-PIN TYPE CHAIN
Goes through walls, floors — indoors or out.
Goes straight up or down.
Sealed tight — confines vapor, liquid, fumes, odors, dust.
Inspection window or door.
Operates in one or more planes, and at any angle.
Can process moving materials under vacuum or pressure with Pneumatrol*.
Heat or cool conveyed material — directly or indirectly.
Receiving sections — can be hoppers, troughs, open or with floor-level grating.
Drain off liquid.
* Trade Mark Applied For.
Requires little clearance space.
You can convey two or more different materials — at same or different time.
Dodges existing equipment or obstacles.
Can have multiple receiving and discharge points.
Straight pipe sections replaceable — can be rotated for extra wear.
Separate take-up when not combined with drive.
WHAT MATERIALS CAN YOU CONVEY?
TYPE OF MATERIALS
POWDERS CRYSTALS GRANULAR
LUMPS METAL CHIPS DUSTS
SLUDGES FLAKES
CONDITION OF MATERIALS
WET · DRY · SEMI-LIQUID · HOT ·
COLD · STERILE · ABRASIVE ·
CORROSIVE · VOLATILE ·
EXPLOSIVE · RADIOACTIVE
Hapman CONVEYORS, INC.
DIVISION HAPMAN-DUTTON COMPANY
KALAMAZOO MICHIGAN

When inquiring check CP 8402 on handy form, pgs. 2-3

MATERIAL HANDLING

(Continued from preceding page)

sary to remove the inter-cell connector from the post to which it is welded if a mere saw cut through that connector (immediately above the line of junction between the bad cell and its neighbor) is permissible.

(Special drill tool used in the procedure is a product of Gould National Batteries, Inc., Dept. CP, Stone and Calhoun Sts., Trenton 7, N. J. . . . or for more information check CP 8403 on handy form, pages 2 and 3.)

Fingertip control, compact design allow walkie to go places in narrow spaces . . .

in handling 48″ pallets, aisles need be only 6′ wide, straddling is the secret

Uses: For general handling of skids and pallets in aisles where space is at a minimum.

Features: In addition to compact design allowing maneuverability in tight quarters, machine has fingertip control for operator, eliminating "big brute" man power.

Even a girl can use it

Description: Electrically operated, the "Go-Getter" walkie lift truck handles 48″ square pallets in aisles as narrow as 6′. In operation, base of the machine straddles the pallets and the forks are thrust under the pallets to do the lifting.

Other specifications include: 1) capacity, 2500 lb — 60,000 in/lb from heel of fork; 2) weight, 1700 lb without battery; 3) overall length, 74″; 4) overall height, 83″, telescopes to 134″; 5)

turning radius, minimum tier at right angles with 48 x 48" load in 6' aisle; 6) four steel trailing wheels with industrial truck tires and with tapered roller bearings, 12 x 3½" dual drive.

(Development of The Revolvator Company, Dept. CP, North Bergen, N. J. . . . or for more information check CP 8404 on form, pages 2 and 3.)

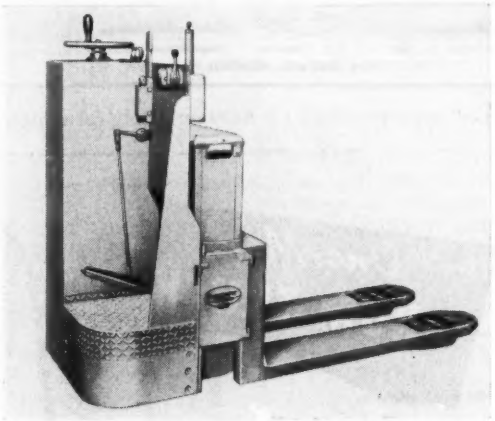
40 x 48" pallet is maneuvered in 6½ foot aisle . . .

truck's three speeds may be controlled by hand, foot, or any combination of the two

Uses: To handle 4000 lb, 48" long loads where narrow aisles, close quarters, and limited floor or elevator capacity are factors.

Features: Truck can maneuver 40 x 48" pallet in aisles only six and one-half feet wide.

Description: Pallet Transveyor is battery powered truck with four wheels having three-point suspension. This equalizes load on both front wheels, regardless of floor conditions. Front



Photograph shows foot and handle devices to control speed of Pallet Transveyor

wheel mounting eliminates frame distortion, uneven load distribution, and insures that front wheels turn in unison.

Operator of truck stands on grid-type safety plate at rear and is protected by a sideguard. He steers vehicle with left hand and operates controls with right hand. Foot pedal controls brake as well as first speed: second and third speeds are governed by push-button on hand grip. Truck can be built with all three speeds controlled by hand, foot, or any combination of the two.

Entire unit is 29 inches long, plus load length, and loaded speed is about four miles per hour. Battery can be removed from either top or side, and they may be shifted from one truck to another.

(Product of Automatic Transportation Company, Dept. CP, 149 W. 87th St., Chicago 20, Ill. . . . or for more information check CP 8405 on handy form, pages 2 and 3.)

Security for Sensitive Chemicals— in Hackney Stainless Steel Drums

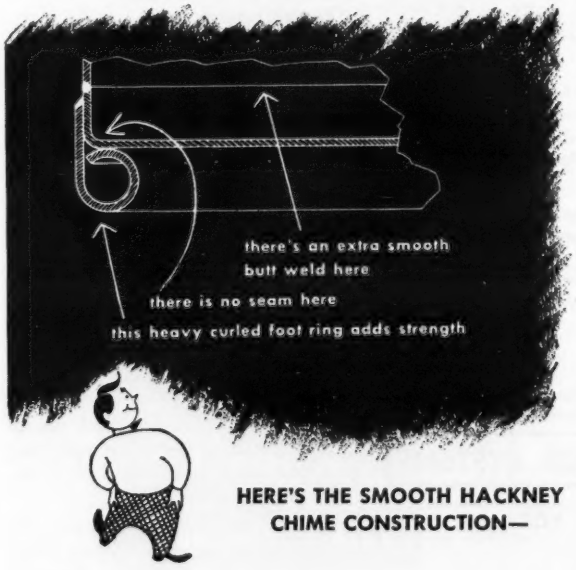
REMOVABLE HEAD OR TIGHT HEAD

Ship with safety in these Hackney Stainless Steel Drums. They're rugged and lightweight —assure complete protection for your products in transit or in storage.

Protection from Corrosion and Discoloration— Available in several types of stainless steel to suit product requirements. Also in nickel and monel metal.

Protection from Contamination—Drums easily and quickly cleaned for re-use—smooth interiors have no cracks or crevices where traces of the previous shipment can lodge.

Protection from damage in transit—Designed to take the hard knocks of shipping without danger of leakage. Heavy I-bar rolling hoops securely attached. Heavy curled foot rings for added protection. Good for years of service and many, many round trips.



Other Hackney Features that Assure Full Protection and Low Maintenance—

Removable Head Drums: Steel reinforcing ring in top curl for extra strength. Cover extends over top rim to keep out dirt when drum is opened.

Your choice of quick-acting Toggletite or bolt type closure. Furnished with or without rolling hoops, in 30, 50 or 55 gallon sizes.

Tight Head Drums: Full curled foot ring on both ends. Forged steel spuds, securely welded and protected by the rolling hoops.

Seamless heads attached by smooth butt weld—that leaves no crevice—assures easy cleaning.

Complete specifications are given in the new Hackney Drum and Barrel Catalog. Write today.

HERE'S THE SMOOTH HACKNEY CHIME CONSTRUCTION—

Pressed Steel Tank Company

Manufacturer of Hackney Products

1463 S. 66th St., Milwaukee 14
1387 Vanderbilt Concourse Bldg., New York 17
235 Hanna Bldg., Cleveland 15
936 W. Peachtree St., N.W., Room 126, Atlanta 3
208 S. LaSalle St., Room 796, Chicago 4
568 Roosevelt Bldg., Los Angeles 17
18 W. 43rd St., Room 19, Kansas City 11, Mo.

Hackney

CONTAINERS FOR GASES, LIQUIDS AND SOLIDS

When inquiring check CP 8406 on handy form, pgs. 2-3

Robinson Air-Activated Conveyor

The **Low-volume** *Air Conveyor*

▶ Heart of the Robinson Air-Activated Conveyor System . . . the Activator which so "fluidizes" the charge, enabling it to be handled with low volumes of air.

Averages 1 Cubic Foot of Air per Pound of Materials Handled

Right here is one reason — and a stand-out reason — why the Robinson Air-Activated Conveyor is so economical in handling bulk dry-pulverized and fine-granular materials. Compressed air costs money so, if you can hold air costs down, as with the Robinson, you keep handling costs down. And no other power is necessary to operate a Robinson System.

The reason why the Robinson System can operate with such low air volume is due to the fluidized nature of the charge when transported through the pipes. Pressure alone will not suffice. It requires this Robinson Air-Activation or fluidizing effect. Material "flows" rather than blasts through.

Many Robinson Systems are in service handling a variety of products and in some cases are transporting them several thousand feet. This system may be just what you need for handling those dry, bulk materials in your plant. It has several outstanding features which we'll be glad to discuss at your convenience.

ROBINSON Air-Activated CONVEYOR SYSTEMS

A Division of Morse Boulger Destructor Co.

211-V EAST 42nd ST. • NEW YORK 17, N. Y.

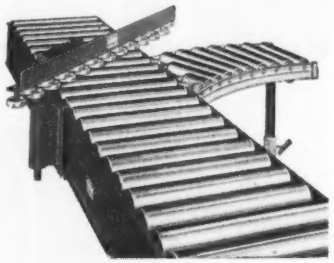
Representatives in Principal Cities

When inquiring check CP 8407 on handy form, pgs. 2-3

Remotely controlled rail diverts roller conveyor loads to spur . . .

attachments facilitate moving units to varied positions

A diverting rail and spur that can be used on any point of a roller conveyor has been offered to speed materials handling operations. The wheel diverting rails can be remotely controlled for diversion of any one of a series of spurs, making complicated switching equipment unnecessary. Clamp attachments make it easy to move the units to any desired position along the roller conveyor line.



Spurs can be moved to any position

(Development of Metzgar Company, Dept. CP, 449 Douglas St. N.W., Grand Rapids, Mich. . . . or for more information check CP 8408 on handy form, pages 2 and 3.)

Heavy loads positioned easily with elevator for shipping . . .

pushbutton controls 1 hp motor for handling up to 6000 lb

Uses: For positioning tools, materials, components, or product for machine set-up, feeding, assembly, or finish.

Features: A 1 hp motor with pushbutton control is used to power the tilting top having a 3″ movement. Capacity of the unit is 6000 lb.

Description: Table area of Portelvator is 60 x 72″, lift is 21½″ (from 5½ to 26″ above floor level). Unit is enclosed on all four sides. Electrical equipment includes the 1 hp operating motor, limit switch, and reversing magnetic starter.

In wrapping operation (as shown in photos) paper rolls are delivered onto the two rollers shown at

CONTROLS bin levels Automatically

S-A TELLEVEL

Prevents wasteful overflow or empty bins . . . does away with choking in enclosed bins. Mount one Tellevel near top, another near bottom. Rising or falling material moves light float ball, stops or starts conveyor, elevator or pump. For bulk materials or liquids—normal duty, explosion proof or heavy-duty.

Rising level of material tilts float-ball and stops conveyor.

Write for TELLEVEL Bulletin 11-O

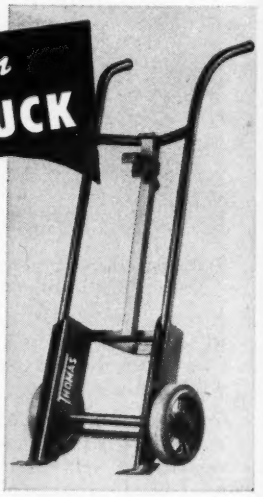
STEPHEN S-A DAMSON MFG. CO.

Tellevel-Bin Level Car Loaders • Car Pullers • Winches • SealMaster Ball Bearings • Saco Speed Reducers

11 RIDGEWAY AVENUE, AURORA, ILL.

When inquiring check CP 8409 on handy form, pgs. 2-3

One-Man DRUM TRUCK



Makes Loading And Unloading Of Drums Up To 1000 Pounds Automatic

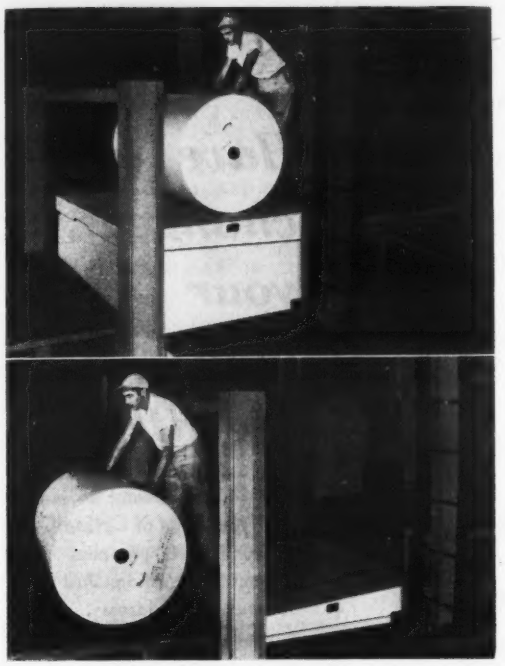
Handling of drums and barrels becomes a cinch for one man with this Thomas Safety Drum Truck. Trucker never touches barrel—loading and unloading is automatic. Sliding 2-in-1 hook fits all wooden and metal barrels, cradles drum securely so it can't roll off. Available with chemical resistant tires. Order one on trial basis.

The No. 90 Thomas Drum & Barrel Truck shown above has a capacity of 1000 lbs., weighs 80 lbs.

THOMAS TRUCK & CASTER CO. 281 Mississippi River Keokuk, Iowa

Send for free literature

When inquiring check CP 8410 on handy form, pgs. 2-3



Wrapping of rolls is effortless

the near edge of platform where the wrapping paper is applied to the rolls' circumference. Rolls are then pushed onto Portelvator and lowered to the floor where automatic tilt top operates to discharge paper onto a second work area where end wrappers are applied. A fork truck then removes wrapped paper to storage.

(Development of the Hamilton Tool Co., Dept. CP, Hamilton, Ohio . . . or for more information check CP 8411 on handy form, pages 2 and 3.)

Portable cranes, industrial elevators from 500-10,000 lb described

Manufacturer's complete line of industrial elevators and portable cranes are described and illustrated in 36-page bulletin.

Portable elevators are shown in hand and electrically operated types, and with single, hinged, and telescopic uprights. These portable elevators are available with load capacities from 500-5000 lb, any platform dimensions required, and with lifting heights up to more than 30'.

Also illustrated and described are pallet elevators; barrel elevators, including drum dumping types; platform loading and balcony elevators; revolving base elevators; four-post elevators for heavy duty (10,000 lb capacity) and floor-to-floor (stationary) elevators. Portable cranes with fixed or revolving bases, and hoists are also shown.

Bul 5211 is issued by Barrett-Cravens Co., Dept. CP, 4609 S. Western Blvd., Chicago 9, Ill. . . . or for more information check CP 8412 on handy form, pages 2 and 3.

Composite photo showing a drum of chemicals being put through a variety of handling motions by the Baker "Octopus."
INLAND STEEL CONTAINER
CHICAGO ILL.

THE BAKER-RAULANG CO. 1853 100 1953 THE BAKER-RAULANG CO.

This BAKER TRUCK handles any shape load...

and stacks it in any position!

■ You name the load—the Baker "Octopus" illustrated will handle it, whether it's a drum, a roll of newsprint, a packing case, a piece of machinery, a bale of cotton or a pallet load of cartons. Moreover, it will pick it up, transport it, raise or lower it, shift it to left or right, revolve it, up-end it, or stack it in any position. In fact, it will handle it with no more physical effort than is needed to operate the simple hydraulic controls.

The "Octopus" consists of a standard Baker Fork Truck equipped with a variety of Baker attachments—360° revolving head, 4-purpose carriage, up-ender, drum clamp, etc.—which may be applied individually or in combinations. While one truck may never be called on to perform all these functions, the "Octopus" demonstrates the range of utility of Baker fork trucks and attachments.

Baker® industrial trucks

write for *6-page special report on the application of Baker attachments to various loads.*

THE BAKER-RAULANG COMPANY
1208 WEST 80th STREET • CLEVELAND 2, OHIO

BAKER-LULL Corporation, *Subsidiary*, Minneapolis, Minn.
Material Handling and Construction Equipment.

When inquiring check CP 8413 on handy form, pgs. 2-3

TOWMOTORS IN ACTION IN U. S. INDUSTRY

Loading a 1,200-pound cargo of castings into an American Airlines freighter.

Right on schedule . . .

However tight the timing and whatever the type of load . . . Towmotor measures up to stiffest materials handling requirements, while bringing man-hour costs 'way down in the bargain. Write for your copy of "Man-Hour Thieves," Towmotor's new handbook for lowering plant operating costs, and name of your nearest Towmotor Representative. Towmotor Corporation, Div. 2303, 1226 E. 152nd St., Cleveland 10, Ohio.

Make the Towmotor Exhibit your first stop at the 5th National Materials Handling Exposition starting May 18, 1953

TOWMOTOR
THE ONE-MAN-GANG ®

FORK LIFT TRUCKS and TRACTORS
SINCE 1919
RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

When inquiring check CP 8414 on handy form, pgs. 2-3

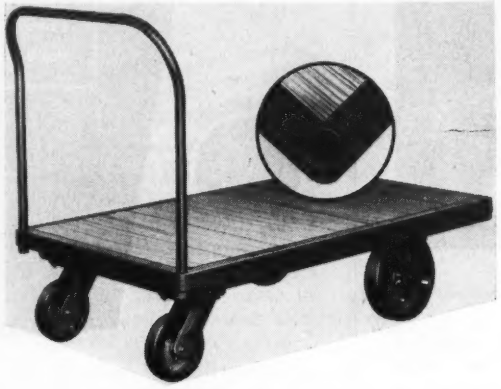
Renewable deck, rounded corners are features of all-welded steel floor truck . . .

capacities range up to 7000 lb, widths to 48", and lengths from 48 to 72"

Uses: For general materials handling uses of floor trucks.

Features: Unit is assembled without use of bolts, has no loose joints. Rounded corners designed for safety. Flush-mounted deck is renewable.

Description: Heavy-duty Model CB floor truck is made with two complete arc-welded steel frames into which the deck is sandwiched and protected



Has no bolts, no loose joints

by a minimum of six or as many as eight crossmembers per truck. Capacities range up to 7000 lb. Standard sizes are 24, 30, 36, 42, or 48" in width; 48, 54, 60, 66, or 72" in length. Other sizes also available.

Smoothly rounded uni-weld stake pockets of unbreakable mild steel are integrally welded into the truck to prevent injury to personnel, material, or equipment. Complete line is equipped with unbreakable fabricated casters and wheels.

Users may choose between tilt and non-tilt types, between steel, rubber, composition, oil-resistant, and static-conductive wheels in all sizes. Choice is also optional between Hyatt type straight roller bearings, ball bearings, and tapered roller bearings, with seals, if desired.

(Development of All Steel Welded Truck Co., Dept. CP, Rockford, Ill. . . . or for more information check CP 8415 on handy form, between pages two and three.)

Barrel skids are fabricated entirely of magnesium

In addition to offering assured safety to men and equipment, magnesium barrel skids are light in weight and capacity rated. Units reduce the risk of lifting injuries, and facilitate drum and barrel handling.

Have you changed your address recently?

● If so, you'll want to insure that your copy of CHEMICAL PROCESSING reaches you without interruption. Just send us your new address . . . use the handy form below.

Please answer all questions in regard to your new affiliation, and in addition give us your former address including company, city and state.

mail this request to
READER SERVICE DEPT.
CHEMICAL PROCESSING
111 East Delaware Place
Chicago 11, Illinois

Former Company Affiliation .....

Former Address .....

Your Name ..... Present Title .....

Present Company .....

Main Product .....

Rating of Company .....

Street Address .....

City ..... Zone No. ..... State .....

Specifications, features and dimensional information are given in 2-page bulletin. Bul SK-801 is issued by MagLine Inc., Dept. CP, Pinconning, Mich. When inquiring specify CP 8416 on handy form, pages 2 and 3.

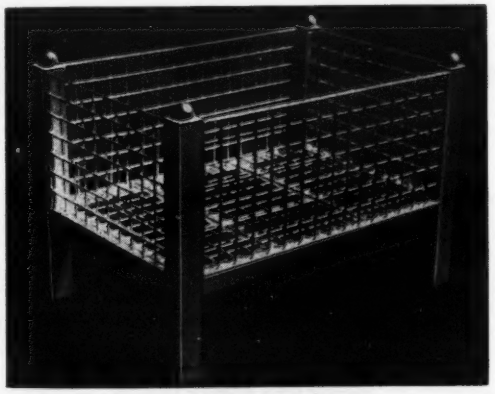
Lightweight, ventilation, drainage are features of wire fabric boxes . . .

self-centering stacking caps on corner posts permit quick tiering, save space

Uses: For stack-storing of materials and small parts during processing.

Features: Use of wire fabric instead of corrugated sheet metal for sides and bottoms decreases weight, allows for ventilation and drainage. Stacking caps of the self-centering types on the corner posts permit rapid, safe lift truck tiering to conserve floor space.

Description: Wire of boxes is welded at ends and each intersection for strength. Bottom frame and corner uprights are square-welded steel tube.



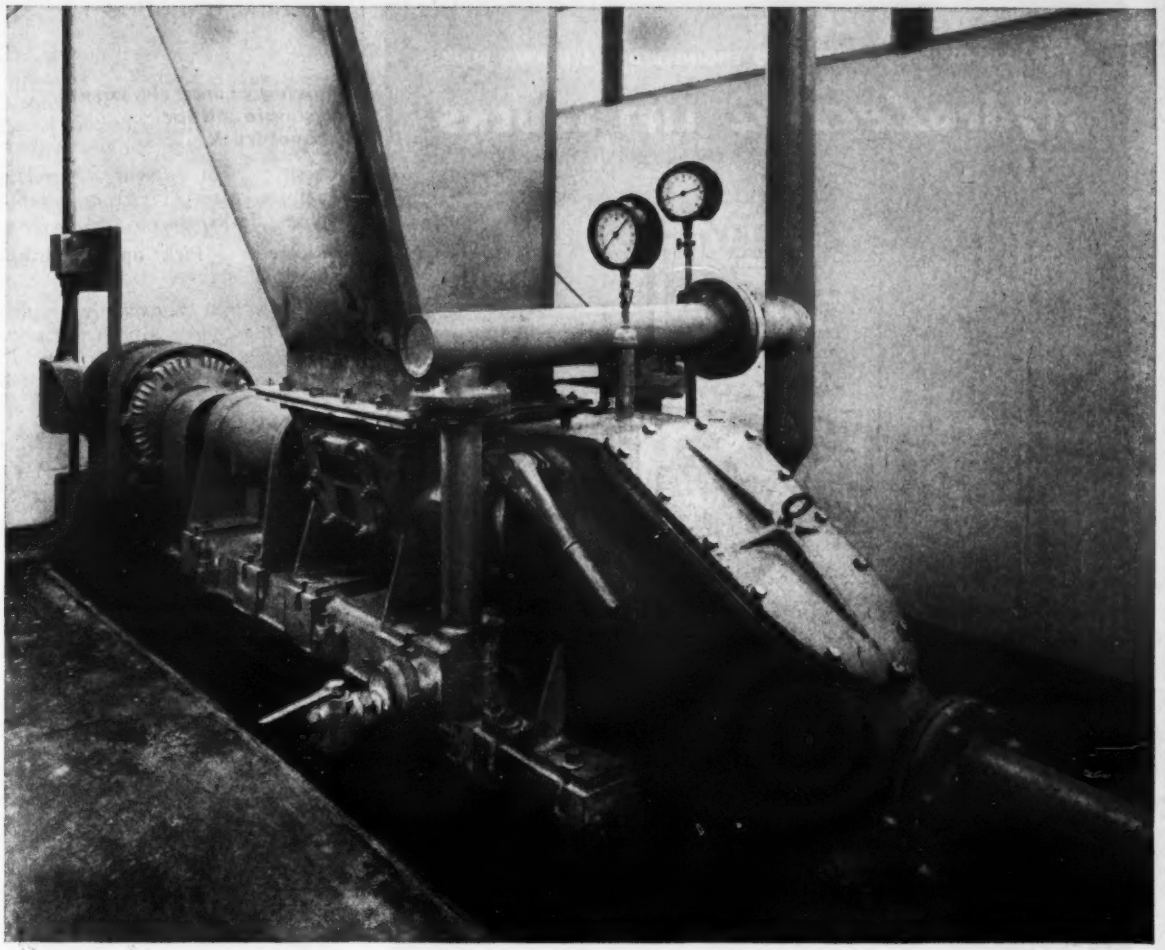
Holds 4000 lb

Standard model shown has content of approximately 30 cu ft, a weight capacity of 4000 lb. Box is available in various meshes and sizes, according to load requirements, and can be provided with lifting hooks for crane handling. Aluminum paint finish is standard.

(Development of Equipment Manufacturing, Inc., Dept. CP, 21550 Hoover Rd., Detroit 5, Mich. . . . or for more information check CP 8417 on handy form, pages 2 and 3.)

Detachable steel chains — how to maintain, apply

Although slanted for agricultural implement designers, 46-page handbook will prove helpful to all who buy, maintain, or apply steel detachable chains. Bul 52-52 is issued by the Chain Belt Company, Dept. CP, Milwaukee 1, Wis. When inquiring specify CP 8418 on handy form, pages 2 and 3.



speeds handling of flash-dried starch with **FULLER-KINYON**

Fuller
CONVEYS BY AIR
CLEAN . . . FAST . . . EFFICIENT

In Hammond, Indiana, the unique, new starch processing operation of American Maize-Products Co., uses the Fuller-Kinyon Conveying System to *float* the final product to bagging departments.

Careful engineering presaged the introduction of this method, new in starch processing. And the same creative engineering found the Fuller-Kinyon System the best solution to quick, economical and sanitary conveying of the dried starch product.

After flash-dried starch is processed to a 12 per cent moisture content, it is conveyed by a Fuller-Kinyon Pump to either dextrine or starch bagging departments. This includes travel through 600 ft. of piping at a rate of 12,500 lb. per hr. Push-button control is used to direct the product stream to the desired point of delivery.

Air conveying of dry, pulverized materials has had specialized engineering treatment at Fuller for twenty-six years. This experience is available to you, without charge, for the examination and installation of Fuller air conveying systems, to save you money. Write today for complete information.

FULLER COMPANY, Catasauqua, Pa.
120 S. LaSalle St., Chicago 3—420 Chancery Bldg., San Francisco 4

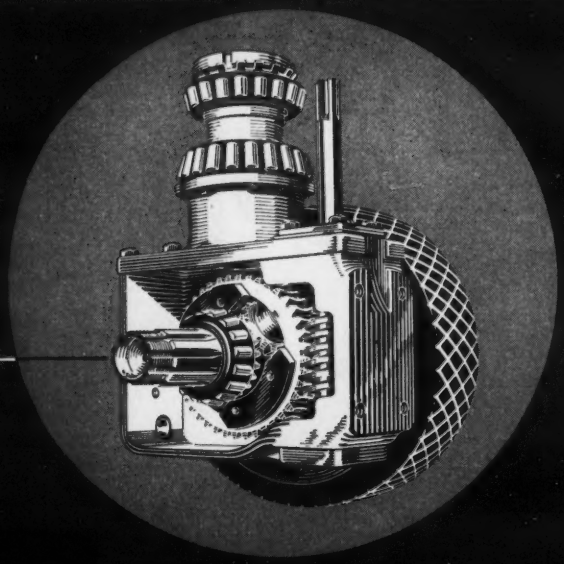
P-142—1818

DRY MATERIAL CONVEYING SYSTEMS AND COOLERS—COMPRESSORS AND VACUUM PUMPS—FEEDERS AND ASSOCIATED EQUIPMENT

When inquiring check CP 8419 on handy form, pgs. 2-3

STUEBING DESIGNED • STUEBING ENGINEERED • STUEBING BUILT

HydroLectric LIFT TRUCKS



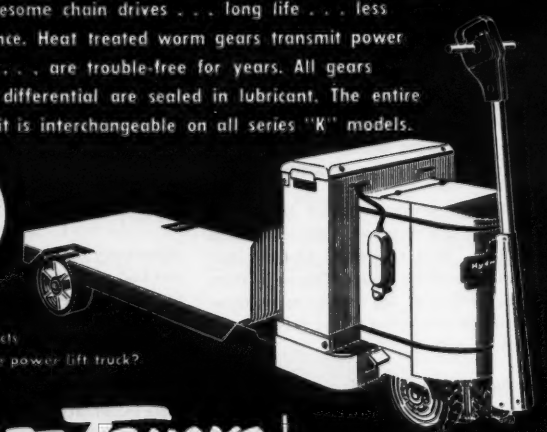
give you 50% easier steering

The twin front wheel drive of a HYDROLECTRIC allows the operator to make shorter turns in closer quarters with one-half the effort of conventional single drive wheels. This is much more important than having a short truck.

The extreme ease of steering is obtained by the true automotive type of sealed-alloy gear transmission with opposed Timken bearings in steering column and wheels for true alignment.

No troublesome chain drives . . . long life . . . less maintenance. Heat treated worm gears transmit power smoothly . . . are trouble-free for years. All gears including differential are sealed in lubricant. The entire power unit is interchangeable on all series "K" models.

LIFT TRUCKS INC. W.W.STUEBING CINCINNATI



Want more facts about this fine power lift truck? Write to:

LIFT TRUCKS INCORPORATED

2423-31 SPRING GROVE AVE. CINCINNATI 14, OHIO

There is a model for every purpose to handle any kind of material

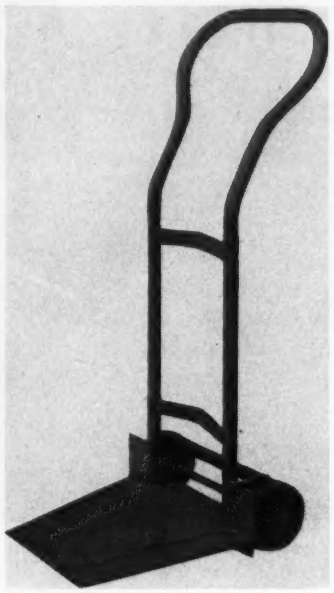
When inquiring check CP 8420 on handy form, pgs. 2-3

Moving of barrels, cases is simple job for shovel truck

Uses: For moving barrels, hampers, cases in factory, warehouses, docks, etc.

Features: Pick up is quick, wheeling is easy.

Description: Shovel truck with all-welded construction has heavy steel nose plate 19" wide at base tapering to 13" at front. Specially designed handle is made of 1¼" OD tubing. Truck, which weighs approximately 150 lb, is equipped with two 6" diam wheels.



All-welded construction

(Development of The Palmer-Shile Co., Dept. CP, 16016 Fullerton, Detroit 27, Mich. . . . or for more information about this product, reader may simply check CP 8421 on handy Reader Service slip between pages 2 and 3.)

No gears, bolts, idlers used in vibratory feeder . . .

feeding capacity of compact unit can reach to 500 lb/hr

Uses: For vibratory feeding or conveying wide varieties of bulk material. Can also be incorporated into weighing and packaging machines.

"Weld-Bilt" EQUIPMENT GIVES YOU LONGER SERVICE IN LABOR-SAVING MATERIALS HANDLING

You can SEE the greater strength and durability in WELD-BILT Equipment . . . in heavier arc-welded construction, in sturdier operating parts, in many innovations that assure easier, friction-free operation. Every piece of "Weld-Bilt" equipment is designed to save operator fatigue, protect product and save money both on original cost and maintenance expense.

You can easily PROVE "Weld-Bilt's" superiority through many more years of actual performance in hundreds of plants all over the Nation. It means your lowest possible investment-per-year in time and labor saving.

"Weld-Bilt" PRODUCTS
Two-Wheel Hand Trucks
Portable Electric Elevators
Pallet-Type Hydraulic Lift Trucks
Hydraulic Lift Trucks
Skid Platforms
Platform Trucks
Write or wire for prices today . . . or for engineering assistance on your handling problems or plans.
WEST BEND EQUIPMENT CORP.
MATERIALS HANDLING ENGINEERS
319 Water Street, West Bend, Wisconsin

When inquiring check CP 8422 on handy form, pgs. 2-3

For specifications and prices on the complete line of Ballymore Safety Step Ladders, send for free catalog. Ballymore Company, Wayne 10, Pa.
Ballymore SAFETY LADDERS
BALLYMORE SAFETY STEP LADDERS

When inquiring check CP 8423 on handy form, pgs. 2-3

These large capacity storage tanks keep your production from going hungry . . . assure ample stocks of raw materials for steady output. With MARIETTA concrete stave silos, you can easily increase reserves from days to weeks, cut handling costs and fully protect stored materials from fire, air, and moisture. Tanks are available in many sizes, many arrangements and can be equipped for materials handling equipment.

Write for full information.

The MARIETTA Concrete Corporation

Marietta, Ohio • Branch Offices: 509 Fifth Ave., New York 17, N. Y. Pulaski Hwy. at Race Rd., Baltimore 21, Md. 805 Bessemer Bldg., Pittsburgh 22, Pa.

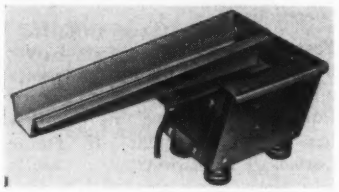
When inquiring check CP 8424 on handy form, pgs. 2-3

We'll Multiply Our Man Power...
With HAMMOND Screw-Lift
If your production involves the movement of free-flowing bulk material you cannot afford to waste precious work time by lugging it, trucking it, or re-handling it from processing machines to storage or packers.
The entire procedure can be handled by Screw-Lifts which take material from receiving hoppers and distribute it to any part of your plant with maximum efficiency.
Screw-Lift is essentially a Screw-Conveyor operating within a tube. It conveys horizontally, vertically, or on any incline, synchronizing with your processing procedure. It forms a totally enclosed system which is dust-tight, noiseless, clean, accessible and automatic. It multiplies your man power by releasing labor to do other jobs.
Capacity range from a slight flow to 3,000 cu. ft. per hour. Lifts to any practical height — requires no more space than a pipe of comparable diameter.
Write today for Form M-500-2 and M-600-2
Screw Conveyor Corporation
HAMMOND, IND.

When inquiring check CP 8425 on handy form, pgs. 2-3

Features: Fashioned after larger counterparts, using electromagnetic vibrating principle, unit operates without gears, belts, bearings, idlers, etc.

Description: Model F-00 electromagnetic vibratory feeder has



Feeds in a trickle or a gushing flow

feeding capacity up to 500 lb/hr. Control of rate of material flow from feeder is by a rheostat in the separate controller and can be regulated from a mere trickle to a gushing flow. Unit, measures 7¼" high, approximately 14" long, weighs 14 lb.

(Development of The Syntron Company, Dept. CP, 110 Lexington Ave., Homer City, Pa. . . . or for more information check CP 8426 on handy form, pages 2 and 3.)

Describes conveyors and accessories

Illustrated 16-page bulletin discusses 4 complete lines of gravity conveyors including: standard roller conveyors, light duty roller conveyors, staggered wheel conveyors and side wheel conveyors. Illustrated with photos and blueprints, bulletin gives complete information and specifications of each particular type of conveyor.

Conveyor accessories which are illustrated and described include: roller, staggered wheel and side wheel 90° turns; side wheel right and left hand switches with straight through sections; two- and three-way switch intersections; and automatic diverters that switch flow from main line to branch lines at 90° angles.

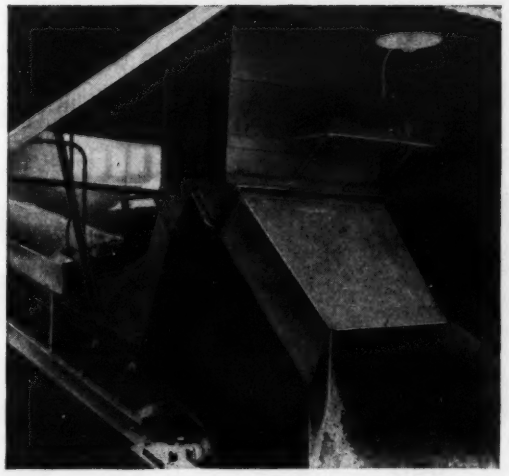
"FMC Gravity Conveyors" is issued by Packing Equipment Div., Food Machinery and Chemical Corp., Dept. CP, Riverside, Calif. When inquiring specify CP 8427 on handy Reader Service slip between pages 2 and 3.

PITTSBURGH COKE & CHEMICAL Reports:

ERIEZ DRUM PULLS IRON FROM SLAG AND IT'S WORTH $40 A TON TO US!

ERIEZ Permanent Magnetic Drum removes 3 tons of iron daily!

"It's like finding gold . . ." says L. R. Forbrich, Cement Plant Superintendent of the Pittsburgh Coke & Chemical Company. Installed on a granulated slag drier, an Eriez Permanent Magnetic Drum has been working 24 hours a day . . . separating an average of 3 tons of scrap metal profits each week from granulated slag! The slag is used in the manufacture of the company's Green Bag Portland-Pozzolan Cement. "The Eriez Drum not only maintains our product's quality, but it reclaims valuable metal. This metal, as scrap iron, is worth about $40 a ton to us on today's market. The drum has paid for itself many times over."



Installed at the discharge of an open or closed chute, spout or screw conveyor, etc., the Eriez Magnetic Drum and Housing automatically, simply and economically removes tramp iron from chemicals.

Only the ERIEZ line of Drums has All These Features:

1. Stainless steel shell resists corrosion and abrasion.
2. Dust-tight construction standard at no extra cost.
3. Rigid, lightweight, compact, cast aluminum sides.
4. Sheave size easily changed for various operating speeds.

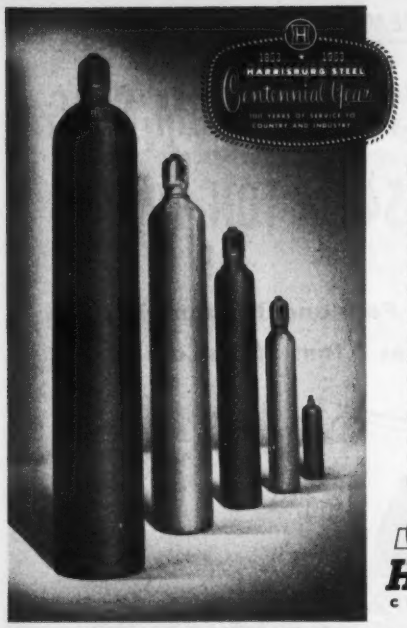
Write for new, FREE 6-page Drum Bulletin which describes all separator installations for the chemical industry.

ERIEZ MANUFACTURING COMPANY

13 Magnet Drive • Erie, Pennsylvania

"Buy permanent protection . . . by ERIEZ"

When inquiring check CP 8428 on handy form, pgs. 2-3



Buy with CONFIDENCE!

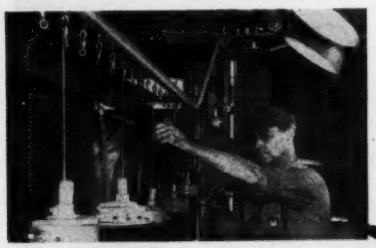
Yes, buy with confidence when you need cylinders for the storage or transportation of fixed, liquid, and medical gases in your plant... and buy from *Harrisburg Steel*, pioneer and world's largest manufacturer of seamless steel high-pressure gas cylinders made to I.C.C. Specifications.

Harrisburg Steel offers you the choice of a complete line, a complete range of sizes and capacities, in both domestic and export types... from 14 to 400 cubic feet. Orders from a few dozen to several thousand cylinders all receive prompt attention. *Write for our Cylinder Catalog and current prices.*

100 Years in Pennsylvania's Capital
Harrisburg Steel CORPORATION HARRISBURG 24 PENNSYLVANIA

HARRISBURG CYLINDERS
FOR HIGH-PRESSURE GASES

When inquiring check CP 8429 on handy form, pgs. 2-3



NOW for the first time! **At low cost**

A Light Capacity Overhead Conveyor, fully enclosed, continuous powered.

CONTINUOUS POWERED OVERHEAD CHAIN CONVEYOR
CHAINVEYOR

Features

Simplicity—Engineered to eliminate complicated, fast wearing parts, Chainveyor is revolutionary in simplicity of design.
Track—1⅜"x ⅛" slotted steel tube easily installed with minimum support.
Chain—Full ball bearing wheels mounted on steel side links, heat-treated for long life.
Curves—15" radii provides extreme flexibility.
Take-Up—Adjustable spring take-up automatically maintains uniform chain tension.
Vari Speed Drive—Positive sprocket tooth drive with easily replaceable shear pin protection.
Capacity—30# per pendant at 6" intervals, 60# at 12" intervals when supported by 2 pendants with cross bar attachment.—up to 400# chain pull.

If your conveyor requirement falls within its capacity—INVESTIGATE CHAINVEYOR. It is truly revolutionary in the materials handling field. Write today for full information. Dept. A

Distributors:
Mathews Conveyor Co. Ellwood City, Pa.
Mathews Conveyor Co. West Coast San Carlos, California
Conveyor Systems, Inc. Chicago, Ill.

UNITED STATES SPRING & BUMPER CO.
4951 Alcoa, Box 2475 Terminal Annex
Los Angeles 58, California

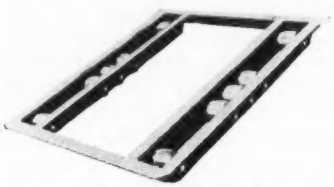
When inquiring check CP 8430 on handy form, pgs. 2-3

Slatted reefer decks won't slow down pallet roller

Uses: Designed principally to speed loading or unloading of reefer cars, pallet rollers can also be used for movement of other pallet loads in a number of plant operations.

Features: Allows greater maneuverability in handling pallets on slatted decks of reefer cars. Equalizer design retains parallelism and alignment of frame under all conditions.

Description: Reefer King pallet rollers give full 360° movement, even on slatted decks. Rolls are of heavy gage, large diam, have crowned ends for free rolling and floor protection. Bearings are heavy duty, fully lubricated. Frame is constructed of high tensile strength steel, fully welded. Axles are dead and hexagonal, cotter-keyed in frame for easy service.



Moves two-ton loads easily over slatted decks

Bearing area of frame is large for heavy loaded pallets and load protection. Three standard styles, all with 4000 lb capacity and equipped with 10 rolls, range in sizes 36 x 36", 42 x 36", and 42 x 42 inches. Weights are 72, 76, and 77 lb, respectively.

(Development of Frank L. Robinson Co., Dept. CP, Latham Square Bldg., Oakland 12, Calif. . . . or for more information check CP 8431 on handy form, pages 2 and 3.)

Gives specifications of track scales

Informative catalog describes and illustrates electronic track scales for motion and stationary weighing of freight cars. Data are given on accuracies, installation, operation and maintenance of various units.

COMPARE FACTS
Before you buy Electric Trucks
Here's material to help you make sound decisions when buying electric trucks. Lewis-Shepard Comparison Charts permit you to list merits of each manufacturer's truck. You get a visual, unbiased comparison that makes selection of the right truck easy. You get "reasons why" that the boys "upstairs" will appreciate when you ask for the appropriation.
Lewis-Shepard invites this comparison because we feel that our complete line of electric trucks is genuinely superior . . . and if you compare the facts, we believe you'll agree. Get your Comparison Charts now, and ask for "Proof Folders" and Catalogs, too. Write today!
LEWIS-SHEPARD
1030-3 Walnut St., Watertown 72, Mass.
Nationwide Service — See "Trucks, Industrial" in your Yellow Phone Book
The "MASTER" Line

When inquiring check CP 8432 on handy form, pgs. 2-3

Coal and Ashes in N. & F. Silos

The coal is crushed, then conveyed by bucket elevator to the tops of the two large silos (CC). Withdrawal to the boiler room is via a screw conveyor.

Ashes are moved by a bucket elevator and drag chain conveyor to the small silo (A). Trucks are loaded through a drop gate.

The installation is at the Larkin Terminal Warehouse in Buffalo.

This is an example of collaboration between machinery manufacturers and ourselves in engineering systems for handling and storing flowable bulk materials. We'll be glad to study your problem.

Ask for our folder, "Bins With the Strength of Pillars."

THE NEFF & FRY CO. • 166 Elm St. • Camden, Ohio

NEFF & FRY SUPER-CONCRETE STAVE STORAGE BINS

When inquiring check CP 8433 on handy form, pgs. 2-3

SAFE--EFFICIENT

MORSE DRUM HANDLING EQUIPMENT

Saves Production Time and Money . . .

ROTATOR DRUM TRUCK #500

Cuts costs of mixing, blending, tumbling, cleansing . . . rotates standard drum loads up to 500 lbs. at 10, 20 and 40 RPM. Also 1 and 5 gal. containers. Rocker frame for easy loading . . . Neoprene tread drive wheels, self-aligned bearings. Complete with ½ hp motor, gear reduction unit and tipping lever.

DRUM CRADLE TRUCK #55-0

Dispensing truck for 55 and 110 gal. drums. Retracting caster frame gives greater wheel base. Side opening for horizontal dispensing. Four wheeled for transporting drum. Rocker action eases loading.

DRUM LIFTING HOOK #41

Lifts steel drums and barrels up to 1000 lbs. Sturdy 7/16" double steel rods . . . 3" diameter lifting ring.

UNIVERSAL CARBOY ROCKER #10

Combination truck and rocker for acid carboys from 18 x 18 x 23 to 20 x 20 x 25. Bottle outlet 20" above floor. Adjustable steel rods reinforce grip on carboy.

HAND TRUCK #100

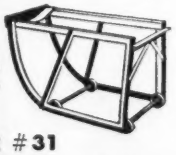
One-man drum handling. Scientifically designed nose-piece and 2-plane construction throw weight directly onto large 10" roller bearing wheels. 1000 lb. capacity.

VERTICAL DRUM ROCKER TRUCK #44

For drums drained in vertical position. Picks up drums and rolls them over to reverse upright position. 4 wheels transport drum in dispensing position. Nose-piece safety catch and threaded hook lock drum to truck.

DRUM CRADLE TRUCK #40

Slip-proof rocker features . . . Nose-piece safety catch holds drum secure . . . non-skids on rocker keep load from sliding.



TIPPING LEVER #31

Tips all drums and barrels. Use with Morse Drum Cradle Trucks for one-man loading and unloading of heavy drums.

DRUM PLUG WRENCH #61

Remove or tighten 95% of all drum plugs. Special steel alloy. Available in bronze — 61 M.

Write today for free catalog showing complete line of Morse Drum and Barrel Handling Equipment

MORSE MANUFACTURING CO. INC.

757 West Manlius St. East Syracuse, N. Y.

When inquiring check CP 8434 on handy form, pgs. 2-3

"Electronic Track Scales" is issued by Cox and Stevens Aircraft Corp., Box 30 CP, Mineola, New York. When inquiring reader may simply specify CP 8435 on handy form between pages 2 and 3.

Loading goes smoothly from different heights . . .

adjustable ramp compensates for tilt of truck

Uses: For loading or unloading of trucks at dock where platform is higher or lower than truck bed.

Features: Adjustable ramp, which compensates for tilt of truck, can be installed in present buildings without excavation or can be mounted on top of existing loading dock. Angular lip rests on body of truck, allowing ramp to "float" with movement of truck body. Ramp remains parallel to both the floor and truck, regardless of off-center truck loading, to assure better stability of loaded fork trucks.

Description: Ramps, built of structural steel beams and heavy floor plate, are made in widths of 6 to 8′ and with a capacity of 5000 to 20,000 lb. They can be furnished either for hand or electric power and controlled either by hand or electrically-operated hydraulic valves for safety.

Ramps stand approximately 8″ high. Units are equipped with a short auxiliary ramp for use above the floor surface.

Ramp is furnished with a heavy-duty hinge arrangement and is moved into truck loading position by means of a hydraulic-operated linkage. Each unit is equipped with a safety device built into the hydraulic linkage which causes ramp to lower slowly into level position if a truck should suddenly move away from platform before the ramp is lowered.

(Development of Hohl Machine & Conveyor Co., Inc., Dept. CP, 2661 Main Street, Buffalo 14, New York . . . or reader may secure more information about this product by simply checking CP 8436 on handy Reader Service slip between pages two and three.)

"Variable Controlled"

Handling of Bulk Materials

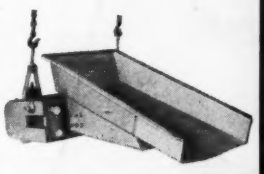
with SYNTRON

VIBRATORY FEEDERS

Syntron Feeders can be controlled to feed at any desired speed for efficient, economical conveying of bulk materials. Electro-magnetic operation eliminates gears, cams, belts, and bearings that require expensive replacement. Pulsating current, vibratory trough action makes materials flow as smoothly as water. Handle more materials with less trough abrasion.

STANDARD FLAT PAN TROUGH

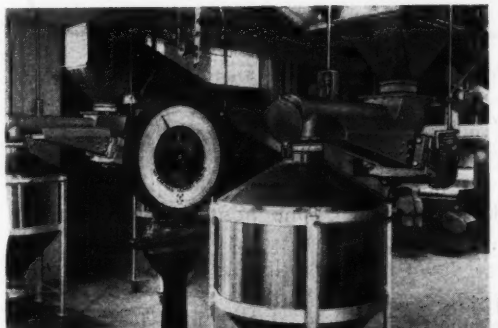
Feeding chemicals to belt conveyor



Feed most types of bulk materials — fine, lumpy, abrasive, hot, cold, dry, or damp. In capacities from a few pounds up to hundreds of tons per hour.

TUBULAR TROUGH

Pharmaceutical materials are handled by Syntron "sealed type" Tubular Feeders.



Syntron Tubular Trough Feeders provide high capacity handling to rotary kilns, driers, mixers, and other operations where dust problems exist. Can be equipped with flexible dust seals.

Write today for complete catalogue information.

SYNTRON COMPANY

110 Lexington Avenue Homer City. Penna.

When inquiring check CP 8437 on handy form, pgs. 2-3

SIMPLIFIED OPERATION
...Designed by MOTO-TRUC
A Twist of the Wrist . . .
Moves Your Load
Roller Grip Control
Patented control affords simplicity of operation unequalled in the lift truck field.
Lifting or lowering control buttons affords quick, easy accessibility.

Practically *anyone* can learn to operate a MOTO-TRUC! Anyone in your plant can become an operator with very limited instruction . . . This is made possible by MOTO-TRUC'S "Roller Grip" control.

Speeds are controlled by a "twist" of roller grip . . . Extreme up or down position of the handle sets the brake . . . A push button on either side of the roller grip controls up or down Hydraulic lift . . . it's as easy as that . . .

Why not get all the FACTS on MOTO-TRUC'S design features . . . Write for complete information.

Representatives in Principal Cities

The MOTO-TRUC Co
1948 E. 59th STREET • CLEVELAND 3, OHIO
PALLET . . . PLATFORM . . . HI-LIFT TRUCKS
LARGEST EXCLUSIVE MANUFACTURER OF "WALKIES"
MOTO-TRUC Designers FOR THE INDUSTRY PATENTED

When inquiring check CP 8438 on handy form, pgs. 2-3

Railroad siding gap doesn't hinder conveying packages across train tracks . . .

space between buildings is breached by retractable roller conveyor boom

Conveying of heavy packages from a car loading platform, across a railroad siding, and to another building has been overcome at a printing plant by use of a retractable roller conveyor boom. The boom can be easily withdrawn to permit passage of an occasional freight car passing between the buildings.

Live roller boom is equipped with fully-enclosed drive mechanism and is a self-contained unit. An

A straight line is the shortest distance

enclosure has been constructed by the user to protect packages passing between the two buildings. This enclosure rides the conveyor frame and is an integral part of the structure. A hinged door is opened as the packages pass along the conveyor.

(Information supplied by Alvey Conveyor Manufacturing Co., Dept. CP, 9301 Olive St. Rd., St. Louis 24, Mo. . . . or for more information check CP 8439 on handy form, pages 2 and 3.)

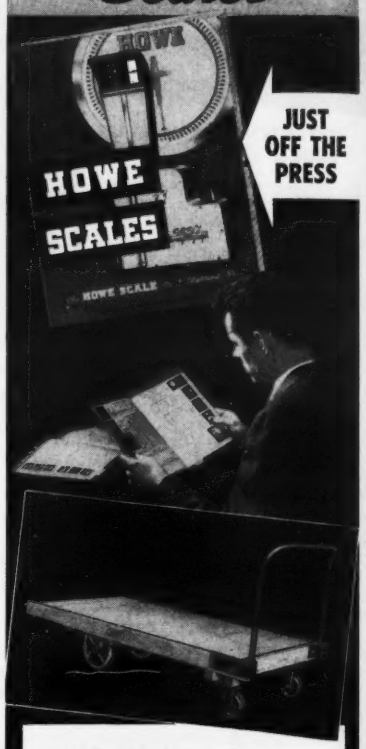
Stories on materials handling and production techniques

Quarterly magazine published by steel company contains several stories on applications of its line of manufacture. Among articles in 12-page publication is one telling how a manufacturer cut handling costs 40% by strapping refractory bricks into palletless units for mechanized handling. Another article describes how one large drug manufacturer solved a problem by using wire stitching to fasten table-packets to display cards.

Illustrated capsule stories show how: 12-ton shuttle cars are braced for rail shipment, steel strapping enables an 80% savings of space, and switching from crating to bundling for truck shipment resulted in a great saving.

"Confab, Vol 4 No. 1" is issued by Dept. 1G, Acme Steel Co., Dept. CP, 2840 Archer Ave., Chicago 8, Ill. When inquiring specify CP 8440 on handy form, pages 2 and 3.

HOWE Scales



Let Us Send You This New Condensed Catalog

The *NEW* Howe Scale Condensed Catalog showing a complete line of industrial scales and hand trucks is yours for the asking. Includes data on the new Howe Weightograph and the new Howe Tape-Drive Dial Scale line for improved weighing operations. Send for your copy today.

The HOWE SCALE Co
RUTLAND VERMONT

Dept. CP 3, Rutland, Vermont
Please send me:
HOWE CONDENSED SCALE CATALOG NO. 11 ☐
HOWE HAND TRUCK CATALOG NO. 15-B ☐
Name _____
Title _____
Company _____
Address _____
City _____ State _____

When inquiring check CP 8441 on handy form, pgs. 2-3

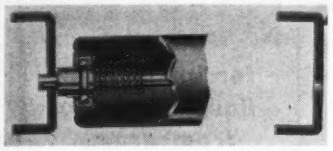
Snap action speeds conveyor roller spacing . . .

adjustments made to suit gravity systems for any load

Uses: For spacing and changing rollers of gravity conveyors.

Features: By use of special snap lock shaft in rollers, space adjustment for any type of load can be made on individual rollers within a few seconds. No special tool is required.

Description: A snap lock is made part of roller shaft. Pressure on shaft end allows roll to be removed without disturbing



Removal is done within a few seconds

other rolls in the frame. When pressure is released, shaft snaps back to normal position.

(Development of the Lamson Corp., Dept. CP, 303 Lamson St., Syracuse, N. Y. . . . or for more information check CP 8442 on handy Reader Service slip between pages 2 and 3.)

Diversified equipment for industrial operations

Sixteen-page illustrated handbook shows types of equipment designed by manufacturer for various processing and material handling operations in industry. Overhead cranes, electric chain hoists, overhead handling systems and gasoline-powered hauler for railway cars are included in types of material handling items discussed. Amony types of chemical processing equipment offered are evaporators, spray dryers, filters, crystallizers and others.

Bul 240 is issued by Whiting Corp., Dept. CP, Harvey, Ill. When inquiring specify CP 8443 on convenient Reader Service slip between pages two and three.

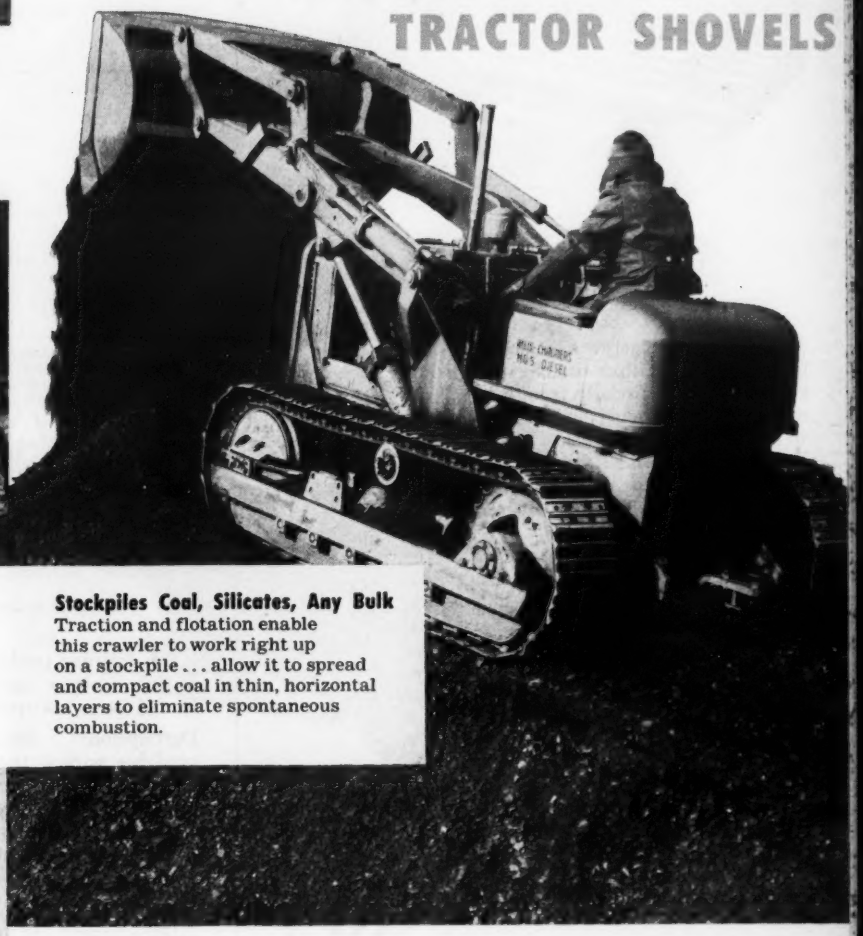
For more information on product at right, specify CP 8444 . . . see information request blank between pages 2 - 3.

Feeds Hoppers, Conveyers
Special high-speed reverse increases output on short runs between stockpile and hopper. Steel tracks stand up in cullet and other sharp, abrasive material.

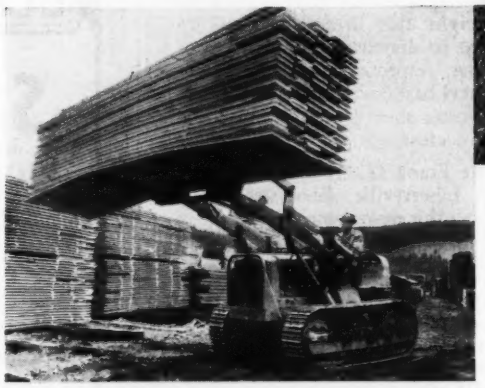
New Trends in Mechanized Materials Handling

WITH ALLIS-CHALMERS TRACTOR SHOVELS

Excavates, Loads Trucks
This busy crawler-mounted shovel has the power to dig into hard-packed materials — and bring it out, a full cubic yard at a scoop. In handling light materials, an interchangeable two-yard bucket doubles its capacity.



Stockpiles Coal, Silicates, Any Bulk
Traction and flotation enable this crawler to work right up on a stockpile . . . allow it to spread and compact coal in thin, horizontal layers to eliminate spontaneous combustion.



Handles Packaged and Solid Materials
With Lift Fork in place of bucket, the HD-5G skids, carries and stacks palletized loads weighing up to 4,000 lb. Stacking height beneath forks is 106 inches.

Crawler tractors — basic machines on earth-moving and construction jobs — are now solving more and more bulk materials-handling problems in industry with hydraulic front-end shovels. And spear-heading this new trend is the Allis-Chalmers HD-5G — thousands of which are now in use in plants of all types. This multi-purpose crawler combines power, traction and maneuverability with a wide selection of hydraulically operated attachments for a variety of material handling jobs.

Get the full story on how crawler tractor power and versatility can help mechanize your tough jobs. Ask your Allis-Chalmers dealer about the HD-5G and these three larger tractors shovels: 2-yd. HD-9G, 3-yd. HD-15G and 4-yd. HD-20G. Light materials buckets range from 2 to 7 cu. yd.

ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

Here are a few of the other jobs the HD-5G and its attachments will handle:

Maintains yards and roads with bulldozer or shovel • Clears snow from parking areas • Moves machinery and other heavy materials with Crane Hook attachment • Spots railroad cars at loading docks • Digs trenches for pipe or foundation footings with Trench Hoe attachment

"Sales and Service from Coast to Coast"

No industry we serve has more efficient heavy packaging than the chemical industry and this is especially true in free flowing chemical products generally handled in bags. Bags are uniform . . . production lines well planned . . . sacking operations well fitted to the particular operation. Close checkweighing is considered important. In fact the above EXACT WEIGHT Scale is the result of requests from the field for equipment for better cost control in the packaging operation. This equipment has been built to exacting specifications for dependability, adaptability, simple construction, ruggedness, speed of operation and accuracy. Chemical plant managers using this scale say it stops "packaging leak" . . . is the answer to uniform bags. If you have packaging leak from bulk to bag write for full details covering EXACT WEIGHT Sacking Scales as well as heavy duty checkweighing units.

EXACT WEIGHT Sacking Scale Model No. 2224—Features pedestal mounting for more room for bag handling; revolving dial visible from any working angle; dust exclusion dashpot for trouble-free operation; new lock-jaw bagholder—capacity to 150 lbs.

EXACT WEIGHT SCALES

BETTER QUALITY CONTROL
BETTER COST CONTROL

THE EXACT WEIGHT SCALE COMPANY
904 W. Fifth Ave., Columbus 8, Ohio
2920 Bloor St., W, Toronto 18, Canada

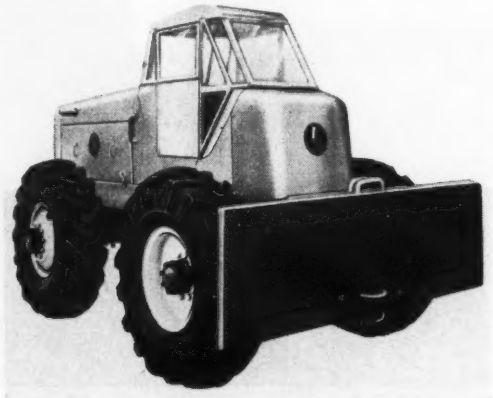
When inquiring check CP 8445 on handy form, pgs. 2-3

Four-wheel drive, torque converter and hydraulic steering aid are tractor features . . .

four speeds forward or reverse combine to move 8 to 10 loaded railroad cars

Uses: Recommended by manufacturer for heavy-duty drawbar and pushing work, both on and off pavement. Tractor also makes a flexible railroad car switcher and spotter for industrial plants and yards.

Features: Highlights of tractor are four-wheel drive, a torque converter drive in addition to a friction clutch, rear wheel steer with hydraulic power booster. Big (16.00-24) tires roll readily



Can push or pull 8-10 loaded railroad cars

across railroad tracks to get to the cars by shortest route. Unit is capable of moving eight to ten loaded cars; has speeds up to 27 mph.

Description: Model TM Payloader tractor is available with a 106 hp gasoline engine or a 90 hp diesel engine, weighs 2500 lb and develops up to 16,000 and 14,000 lb drawbar pull, with gasoline and diesel engine, respectively. Compact design and short wheel-base, with sharp turning radius and power booster steering enables machine to maneuver easily in close quarters.

(Development of the Frank G. Hough Co., Dept. CP, Seventh Street, Libertyville, Ill. . . . or for more information about this development, reader may simply check CP 8446 on handy Reader Service slip between pages 2 and 3.)

Prelubricated sealed units save grease needed on belt idler conveyor . . .

depending upon conditions, lubricating service can be done at three-year intervals

Uses: As an idler on belt conveyors.

Features: Factory-lubricated and sealed unit can, under certain conditions, operate for as many as three years at a time without re-lubrication. Entire unit can be disassembled, seal replaced if

When inquiring check CP 8447 on handy form, pgs. 2-3

RM
RESISTANT MATERIALS

SPECIALISTS IN ALL
RESISTANT PIPING MATERIALS
TO YOUR SPECIFICATIONS

STAINLESS

PIPE—FITTINGS—VALVES

WELDING • SCREWED • FLANGED

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necessary, lubricant renewed, and put back into service to add still a greater number of years to the unit's operating time.

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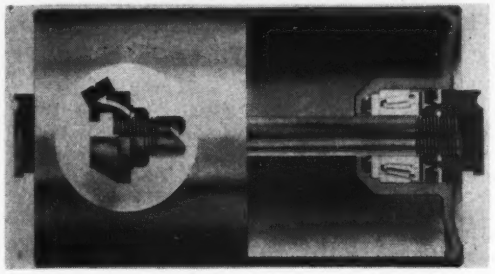

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sible migration of the grease from upper to lower bearings on inclined rolls. Lubricant is a top quality water repellent grease of a stable consistency with a wide temperature range, manufacturer claims.

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(Development of Industrial Division, Continental Gin Company, 4510 5th Ave. S, Birmingham 2, Alabama . . . or reader may secure more information by simply checking CP 8449 on handy information request slip between pages 2 and 3.)

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THE EDITORS

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24-page illustrated catalog contains information, specifications, and application data on loading and unloading assemblies for tank cars and trucks . . . spring-balanced, counter-balanced, component parts, etc. Cat F-7 is issued by OPW Corporation, Dept. CP, 2735 Colerain Ave., Cincinnati 25, Ohio. When inquiring about this catalog simply specify CP 8450 on handy form between pages 2 and 3.

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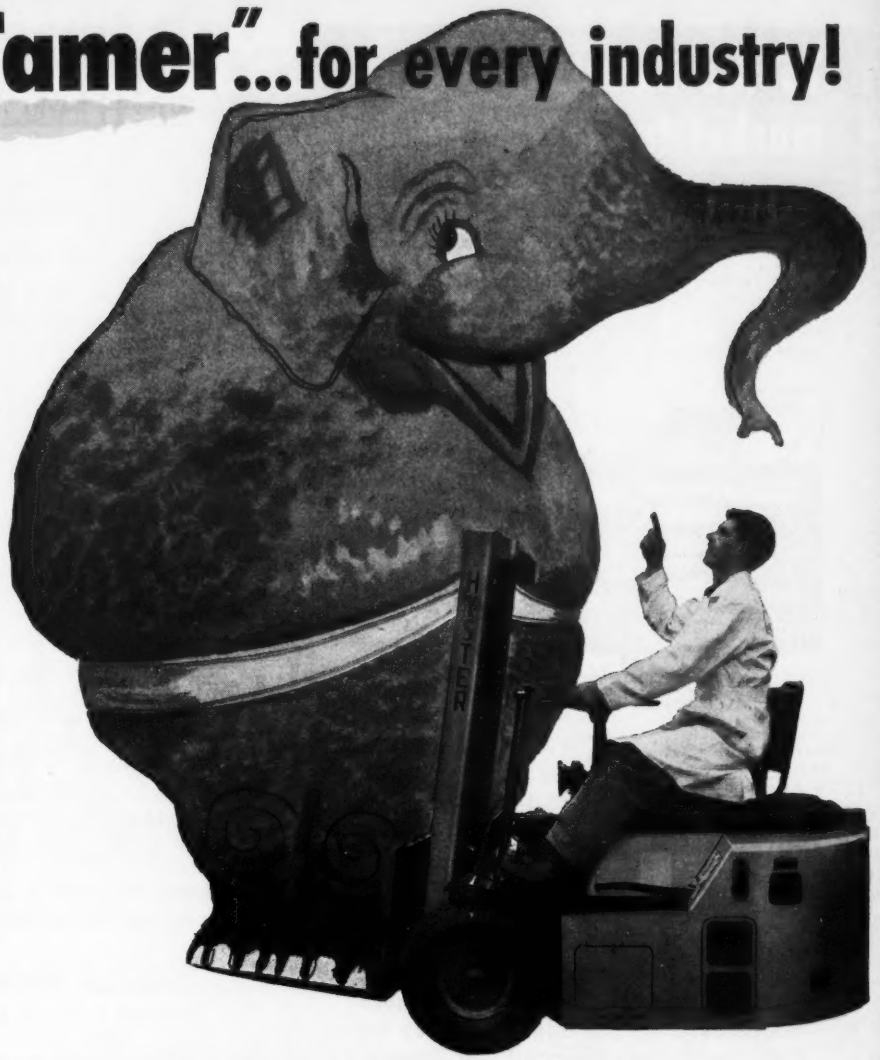

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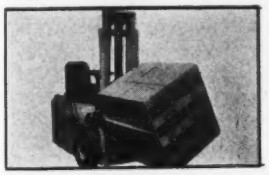

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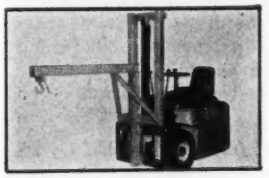

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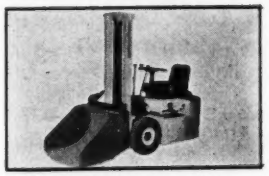

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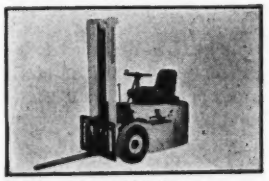

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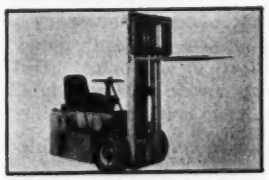

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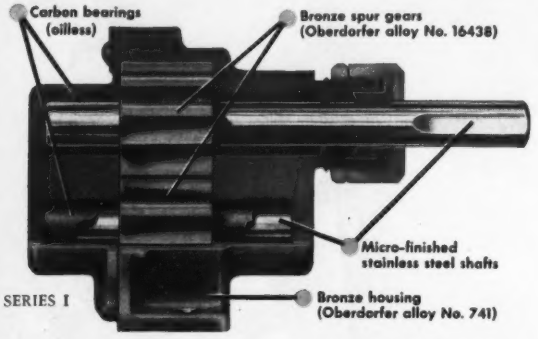
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Recent Books

MANUFACTURE of INTERMEDIATES and DYES

Reviewed by R. P. Mariella, Chairman
Department of Chemistry
Loyola University

"Manufacture of Intermediates and Dyes" was written by G. H. Frank. This little book of 177 pages contains an amazing conglomeration of odds and ends. This opus is apparently intended for the factory dye worker who knows little or no chemistry, or for the engineer who may be involved in the designing or operation of a dye works. Directions range from advice on how to schedule men in three shifts, the advisability of having a first aid kit handy, and to wash out one's eyes should an accidental splash occur, to actual laboratory instructions concerned with the manufacturing processes of dyes.

The dyes discussed are those derived from the benzene, naphthalene, and anthracene series. There is much material in the book which can be found in the most elementary chemical engineering and organic books.

To obtain "Manufacture of Intermediates and Dyes," remit $4.50 *direct to Chemical Publishing Co., Inc., 212 Fifth Ave., New York, N. Y. When inquiring specify CP* 8453 *on handy Reader Service slip between pages* 2 *and* 3.

CHEMICAL ENGINEERING OPERATIONS

Reviewed by G. M. Brown, Associate Professor
Dept. of Chemical Engineering
Northwestern University

"Chemical Engineering Operations" is designed as a textbook for use in courses similar to those offered in Chemical Engineering in Great Britain. Although it appears to be fairly well up-to-date, it is rather incomplete by comparison with the books in the same field published in this country.

The seventeen chapters present fifteen different unit operations and a chapter each on measurement and automatic control. Chapters are practically independent and can be taken up in any order. This book should prove useful to anyone wanting a brief survey of chemical engineering unit operations.

There are many drawings of equipment and calculation diagrams, all of which are adequate and clear but inferior to those published in other books on this subject. Several equations are presented along with the descriptive material but none of them have been derived. This book is almost entirely descriptive in its treatment.

To obtain "Chemical Engineering Operations" remit $7.50 *direct to Chemical Publishing Co., Inc., Dept. CP, 212 Fifth Ave., New York* 10, *New York. When inquiring specify CP* 8454 *on handy form, pages* 2 *and* 3.

QUANTITATIVE ANALYSIS

Reviewed by T. U. Marron, Supervisor
Chemical Research and Engineering
A. B. Dick Co.

This is a well-composed text which concisely presents the required fundamental principles and techniques of quantitative analysis in a readily understandable style. The many photographs and drawings will be particularly helpful to readers, whether in the class of experienced or novice analysts.

Gravimetric methods are treated first in this publication authored by Harvey Diehl and G. Frederick Smith. While the text is quite complete, the subject matter could have been broadened considerably without becoming unduly complex through the addition of a few paragraphs and sentences here and there. Factors underlying choice of procedure are neglected. A word or two about an advantage or disadvantage of a procedure would be a major contribution. On the plus side is the chapter on colorimetry which is a competent introduction to the subject.

References to chemical literature are omitted. A rare exception is one elaborate reference to advertising in chemical journals. An unusually long discussion of pH and buffers does not intimate that some readers will run into pOH or hydronium ions. Many of the worthy contributions of Dr. Smith to industrial analysis, such as cerate and perchlorate procedures, are included; perhaps modesty requires that all original references be omitted, therefore.

It is surprising to find that the author's only attempt at sophistication takes up four pages on Versene while the industrial necessities of single-deflection weighing and the boric acid Kjeldahl procedures are entirely suppressed.

On the whole, it is thought the generally fresh but didactic approach throughout the book will be widely appreciated.

To obtain "Quantitative Analysis" remit $5 *direct to John Wiley & Sons, Inc., Dept. CP,* 440 *Fourth Ave., New York* 16, *N. Y. When inquiring specify CP* 8455 *on handy form, pages* 2 *and* 3.

SOLUBLE SILICATES, VOL I

Reviewed by Callaway Brown, Senior Chemist
Armour Research Foundation
of
Illinois Institute of Technology

"Soluble Silicates, Volume I" is the first of a two-volume ACS Monograph by James G. Vail, replacing his well-known monograph, "Soluble Silicates in Industry." It is written to provide a source book on

soluble silicates, seasoned by forty-six years of distinguished service which the writer had with the Philadelphia Quartz Company.

Volume I deals with the chemistry of silica-alkali systems and their solutions in water. The emphasis is on physico-chemical principles and properties, heavily documented with research data, some of it previously unpublished. A good balance is maintained between information and interpretation. More than two hundred figures enliven the presentation.

The beginnings of the industry, its growth out of the picturesque "water glass" stage, and present practices in the manufacture and control of silica in soluble form, are traced in two introductory chapters. Comprehensive treatment of the homogeneous systems, the heterogeneous systems, and complex systems then make up the bulk of the book.

Homogeneous systems are classified, according to water content, into glasses, concentrated hydrous systems, and dilute hydrous systems. A wealth of data on the physical properties as a function of composition is given. Equilibria and physical properties of heterogeneous systems are clarified by liberal use of tri-axial phase diagrams. Optical and crystallographic properties of most of the known alkali silicates, both in the hydrated and anhydrous form, are detailed.

More than half of the book is devoted to complex systems. Reactions of soluble silicates with heavy metal salts, formation of silica sols and gels, colloid chemical principles applied to gelation, syneresis and electrochemical changes are discussed. Industrial applications are kept in the background for treatment in the forthcoming Volume II, but primary emphasis is on silicate chemistry as it affects extremely diverse industries. Detergency and dispersion receive the most attention, but the formation of surface coatings, adhesives, absorbents, organosilicates, fillers in rubber and latex, water treatment, silica deposits from high pressure steam, fertilizers and soil reactions are also touched upon.

To obtain "Soluble Silicates, Vol I" remit $9 to Reinhold Publishing Corp., Dept. CP, 330 West 42nd St., New York 18, N. Y. When inquiring specify CP 8456 on handy form, pages 2 and 3.

ORGANIC SYNTHESES, VOL 32

Reviewed by R. G. Newhall
Product Development Department
Oronite Chemical Co.

Present volume of this well-known series, prepared under the direction of Editor-in-Chief Richard T. Arnold, continues the high standards of clarity, brevity, and thoroughness set by its predecessors. Syntheses are given for thirty-nine compounds not previously covered, and in addition improved procedures are detailed for four compounds which have been discussed in earlier volumes. Since these volumes are so familiar to the chemist, it is hardly necessary to discuss the current one in detail, but a few of the most interesting reactions may be noted.

Several oxidations of $>CH_2$ to $>CO$ are described — one with SeO_2 (1,2-cyclohexanedionedioxime),

(Continued on next page)

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one with CrO_3 (alloxan monohydrate), and one with $CaCO_3$ and Cr_2O_3 (methyl *p*-acetylbenzoate). Reduction reactions include one using Raney nickel (5,5-dimethyl-2-pyrrolidone) and one employing $LiAlH_4$ (2,2-dichloroethanol). A variety of esterification, alkylation, and hydrolysis reactions are described as well as both vinylation and ethynylation with acetylene.

In addition there are several sets of syntheses which form series leading from relatively simple starting materials to more or less complicated compounds. Among these are such transformations as:

isocaproyl chloride ⟶ β-chlorovinyl isoamyl ketone ⟶ β-ketoisooctaldehyde dimethyl acetal dicyclopentadiene ⟶ 3-chlorocyclopentene ⟶ Δ^2-cyclopentenylmalonate cyclohexanone ⟶ 1,2-di-1-(1-cyano)-cyclohexylhydrazine ⟶ 1,1′-azo-*bis*-1-cyclohexanenitrile ⟶ 1,1′-dicyano-1,1′-bicyclohexyl methyl acrylate ⟶ methyl γ-methyl-γ-nitrovalerate ⟶ 5,5-dimethyl-2-pyrrolidone ethyl acetoacetate ⟶ isodehydroacetic acid ⟶ 4,6-dimethylcoumalin

As in the past, the present volume forms an invaluable guide to the laboratory synthesis of a variety of compounds which will be of interest to organic chemists in every field.

To obtain "Organic Syntheses, Vol 32" remit $3.50 *direct to John Wiley & Sons, Inc., Dept. CP,* 440 *Fourth Ave., New York* 16, *N. Y. When inquiring specify CP* 8459 *on handy form, between pages two and three.*

CONDUCTIMETRIC ANALYSIS at RADIO-FREQUENCY

Reviewed by George Hare
Technical Director of Research
Beckman Instruments, Inc.
South Pasadena, Calif.

"Conductimetric Analysis at Radio-Frequency" by G. G. Blake of the Physics Department of the University of Sydney, Australia, containing 109 pages is intended "to describe the author's new technique and methods of conductimetric analysis and to supply all the necessary information required to enable the reader to set up for himself reliable apparatus with which to carry out analyses and titrations". Author intentionally avoids discussing the theoretical aspects of his measurements and equipment but describes a wide variety of experiments and accessory equipment such as special cells, dippers, flow controls, circuit variations, etc pertaining to radio frequency conductance work.

In particular he discusses the measurement of moisture, liquid diffusion rates, concentration control and some interesting but nearly unrelated topics such as a "phone vibration operated relay" and an "electrolytic relay". The author's "Radio Frequency Impedance" method is based on sound principles and the equipment described is generally intended for laboratory use.

Since the author is an experimentalist of great skill, it is unfortunate that he has not included more information on certain practical aspects of radio

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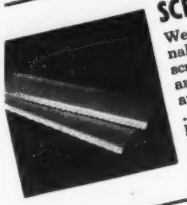

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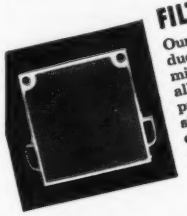

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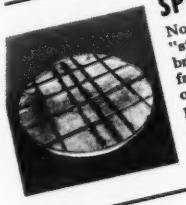

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frequency conductimetric analysis. For example, very little emphasis is given to the need for great mechanical rigidity in the radio frequency portions of the circuits, and too little attention is given to the various technique factors which influence the linearity and sensitivity of the system response. The book appears to have been hastily written and therefore suffers from poor organization.

In summary the book can be best considered as a source of ideas and is therefore recommended as such. It contains a list of 95 references to other literature wherein much valuable additional material may be found.

To obtain "Conductimetric Analysis at Radio-Frequency" remit $2.75 direct to Chemical Publishing Co., Inc., Dept. CP, 212 Fifth Avenue, New York 10, N. Y. When inquiring about this book simply specify CP 8461 on handy form between pages 2 and 3.

LIQUID EXTRACTION

Reviewed by B. E. Lauer, Head
Department of Chemical Engineering
University of Colorado

B. E. Treybal's *"Liquid Extraction"* is perhaps the best book of the unit operations series which has been published to date. It is clearly written, superbly organized, unusually thorough in its treatment of the subject, and complete in its coverage of both the theoretical aspects and industrial applications of fluid extraction.

The book begins where it should, that is, with a discussion of the techniques of liquid extraction processes in comparison with other methods of achieving the same results. Following this introduction, Treybal presents a perfectly rational development of the subject. His opening chapters deal with such fundamentals as the phase rule, the laws of distribution of materials in multi-component systems, and the treatment of problems relating to diffusion and to mass transfer. This material and a chapter relating to the selection of a solvent complete the strictly theoretical portion of the book.

A large calculations section is generously interspersed with examples of the solution of problems of an industrial nature. This section covers almost every possible set of conditions, and should be most useful to the engineer confronted with a design problem relating to liquid extraction. Two chapters on equipment and one describing numerous practical applications of liquid extraction bring the text portion of the book to a close.

The book is carefully and fully documented, has an extensive list of problems, and both a name and subject index. It should be an outstanding chemical engineering text, especially for students at the graduate level, and should be highly valuable to the practicing chemical engineer.

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automatically maintains CONSTANT AIR WEIGHT at all temperatures

How "air anemia" affects oven operation

In any oven when air is heated, its density (weight) decreases. As the density decreases the air has less ability to transfer heat to the specimen. Its temperature tends to be unstable and will vary at different areas within the oven. Ordinary ovens, therefore, become less efficient as the temperature rises.

Blue M Con Wate is the only convection oven which automatically provides constant air weight circulation

How the Con Wate achieves greater efficiency

The key to Con Wate's efficiency is the automatic control damper which progressively forces more air (C. F. M.) into the working chamber as the temperature rises. This compensating feature for the loss of air weight is due to the unusual blower system and damper (patents pending). Thus . . . faster, more uniform heating with less temperature fluctuation. Results . . . faster procedures and more uniform specimens.

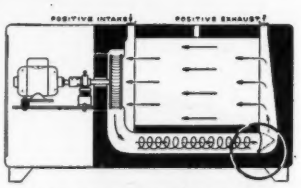
Other exclusive Blue M features

Packaged Protection control unit (Optional) For instant shut-off and alarm for any failure in electric or air circuits.

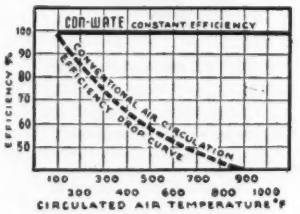
Visi-Float Gauge—shows visually the status of air circulation *inside* the oven.

Higher temperature range . . . all Con Wate models have a working range of 35°C to 288°C (95°F to 550°F).

Power Selector Switch controls wattage input for important savings in time and power.



The Con Wate system showing the bi-metallic automatic damper which is curved when cold, straight when hot.



This efficiency drop curve also reflects the greater temperature stratification and variation of the conventional air circulation ovens when compared to Con Wate ovens.

For complete information see your local dealer or write for Bulletin

BLUE M LINE

BLUE M ELECTRIC COMPANY
306-308 West 69th Street, Chicago, Illinois

* **4 STANDARD SIZES**

MODEL CW-14, I.D.—14"W. x 14"D. x 14"H.
MODEL CW-20, I.D.—24"W. x 18"D. x 20"H.
MODEL CW-32, I.D.—32"W. x 20"D. x 32"H.
MODEL CW-48, I.D.—48"W. x 24"D. x 36"H.

When inquiring specify CP 8463 on handy form, pgs. 2-3

For the laboratory

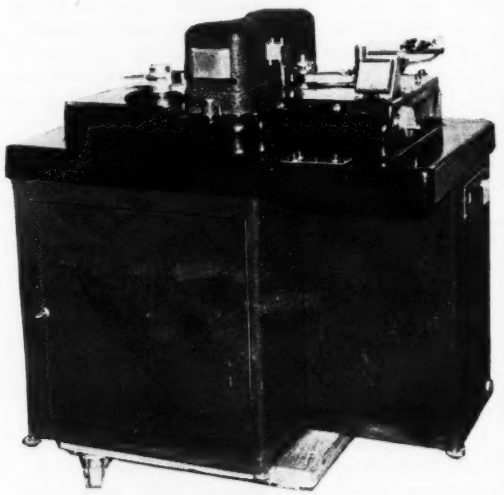
X-ray spectrometer incorporates Geiger counter to provide useful analytical tool

No knowledge of electronics is required to operate instrument for variety of projects

USES: Instrument may be used for research and educational projects as well as for production control. It is designed specifically for spectrometric work.

Features: The 90-degree X-ray spectrometer is complete and ready for use, requiring no adaptations or assembly of parts. Control layout is simple and convenient for rapid work.

Description: Designed to provide a full standard range of operation, the Norelco 90-degree Geiger-counter X-ray Spectrometer employs a long-life air-cooled X-ray tube and a goniometer



Integrated X-ray spectrometer incorporates Geiger counter for versatility

having a radius of 130 mm. Angular range is minus 10 to plus 90° (two theta). Angle can be read directly from a dial or from a strip chart and can be varied by a manual drive or by employing incorporated motor drive. Geiger-counter position is continuously readable to 0.01° (two theta) over full range.

High output X-ray generator provides fixed operation at 35 kv at 6 ma and operates on 200-240 v, 50-60 cycles. X-ray tube is air-cooled and can be quickly interchanged. Voltage and current stabilizers are included. Instrument provides a fixed stable voltage of 1500 for Geiger-counter tube.

Linear rate meter operates a 10 mv recorder; no zero adjustment is required, and full scale ranges of 100 and 1000 counts per second are provided.

Instrument is easily aligned with gages and fixtures provided as part of equipment. The 90-degree spectrometer has an on-off shutter for beam cut-off and shutter shield to reduce stray radiation. Geiger counter is special tube which is volume-sensitive to X-rays.

(Instrument is product of Research & Control Instruments Div., North American Philips Co., Inc., Dept. CP, 750 S. Fulton Ave., Mt. Vernon, N. Y. . . . or for more information about this product reader may simply check CP 8464 on handy form, pages 2 and 3.)

High intensity shielding container protects user from radiation of radioactive source . . .

incorporates cover designed to provide maximum protection for user when opening container

Uses: Shipping and storage of Cobalt-60 radiography or other industrial sources.

Features: Hinged, wedge-shaped cover lifts up from center of container and is designed to provide maximum protection for user when opening container. Cover can be locked in place to prevent unauthorized access to source.

Convenient container for shipping and storage of radioactive sources incorporates cover which affords user safety during opening of container and may be locked to prevent unauthorized access or tampering

Description: Made of an outer shell of ⅜" malleable iron filled with lead, the Model E-31B High Intensity Source Container provides an effective shielding which is the equivalent of 4" of lead. Container will hold up to approximately 800 millicuries of activity. For example, radiation from an 800 mc Cobalt-60 source will be less than 10 mr per hour at one meter.

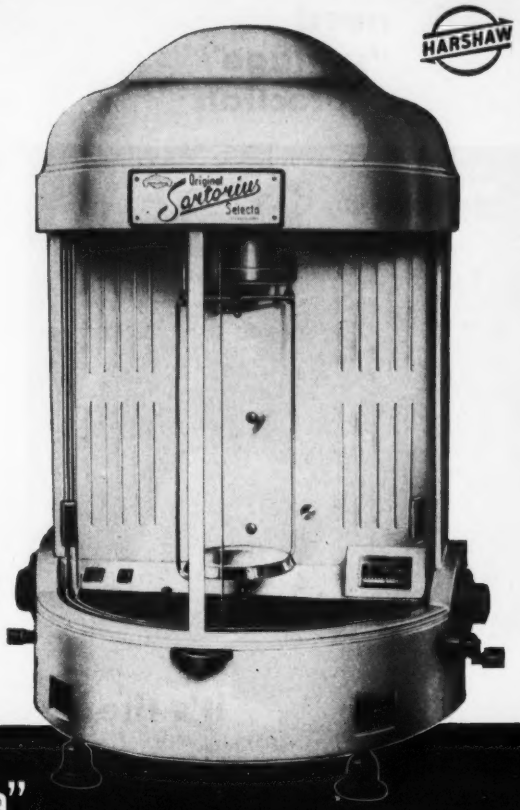
Hinged, wedge-shaped cover pivots up and back from center of container, thus erecting a 4" lead shield between the exposed source and the user. Container weighs 150 lb and measures approximately 10¾" in height. Finish is light blue and the words "Danger-Radioactivity" are stenciled in ⅝" high red letters, across two sides. Removable lead insert, 1" in diam and 1" long with a tapered hole, accepts radioactive source.

(Container is a product of Tracerlab, Inc., Dept. CP, 130 High St., Boston 10, Mass. . . . or for more information check CP 8465 on handy form, pages 2 and 3.)

Here are the important features of the "Selecta"

ORDER IT FROM HARSHAW

- Single Pan—No Weight handling
- Minimum Load—Long Life of Critical Parts
- Standard Double Beam—Atmospheric Changes Automatically Compensated For
- Separate Beam and Weight Compartments—No Dust Problems
- Instant—Non-Magnetic Damping—Equally Effective Under All Loads
- Recessed Projection Screen—Easily Visible Under All Conditions
- Circular Sliding Doors—Unimpaired Visibility
- Automatic Indication of Last Three Decimal Points on All Models—No Time Lost by Handling of Fractional Weights
- Carry-all Base Casting—No Vibration of Critical Parts During Weighings
- Round Space-saving Shape—Deflects Heat and Light Radiation, Reduces Air Space in Weighing Compartment
- New Weight Loading Mechanism—Two Table-level Double Knobs Required for Operation, Operates with Beam Partly Released
- New Counter—Indicates Automatically Applied Weight



The Sartorious "Selecta"

ANALYTICAL SPEED BALANCE

Unequaled in its range for Speed • Accuracy • Convenience • Reliability

SPECIFICATIONS

Capacity: 200 grams **Reading:** 1/10 mg
Sensitivity: 1/10 mg **Automatic Range:** 100 mg
Knife Edges and Planes: Agate. All Models
Damping: Fast Air Damping
Release:* Combination beam, pan support and light switch
Pan: 75 mm diameter, heavily nickel plated
Suspension: Compensating, eliminates errors due to improper placing of load on pan.
Arrestment: Sartorius Circular Type, no slipping of knife edges on bearing

Case: Sturdy light metal alloy, non-magnetic, light grey finish
Zero Point: Adjusted externally by moving indicator line or vernier
Weights: Stainless steel, adjusted to sensitivity of balance
Current: 110/220 volt built-in transformer 50/60 cycles, A.C. *only.*
(*) Release levers are provided on both the left- and right-hand side of base.

H-2424—"Selecta" (Rapid Model) Balance . . . . . each **$890.00**

HARSHAW SCIENTIFIC
DIVISION OF THE HARSHAW CHEMICAL CO.
CLEVELAND 6, OHIO

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When inquiring check CP 8466 on handy form, pgs. 2-3

when you need "spillage" protection

it's the

LINDBERG

LABORATORY HOT PLATE

The Lindberg Hot Plates have the built-in spillage protection that the baby kissin' politician wishes he had.

Maximum protection from corrosion, discoloration and hazards caused by spillage of liquids and chemicals onto the heating element is a built-in feature of the specially "metalized" top plate. The special ¼" metal top plate resists growth and warpage . . . rounded edges and apron protect underlying elements . . .

Coiled nickel-chromium elements heat the entire top uniformly from 130° to the continuous operating peak of 950° F. (54 to 510° C.) . . . **simple, stepless temperature control to any degree of heat within the working limits is supplied by the exclusive Lindberg Input Control.**

All parts of the unit are protected by heavy insulation and sheet steel. All instruments and controls are built-in . . . ready for one connection to the power source. Smooth button supports prevent the unit from disfiguring its supporting surface. Units are carefully packed and individually shipped.

Ask your laboratory equipment dealer for full details, or write Lindberg Engineering Company, 2450 West Hubbard Street, Chicago 12, Illinois. *Ask for Bulletin 962.*

LINDBERG—*for a complete line of the finest*
LABORATORY HEATING APPARATUS

When inquiring check CP 8467 on handy form, pgs. 2-3

Sub-zero test cabinets offer wide temperature range for variety of tests . . .

when combined with any number of units, cabinets furnish any number of temperatures

Uses: Designed for use in petroleum and other laboratory work. Especially useful in cloud and pour point tests; also useful for general-purpose testing of products and materials down to –100°F.

Features: Four models provide complete range of temperatures needed for oil testing under ASTM D97-47. Available for operation at –100, –60, –30, and 0°F. The latter unit will also give satisfactory control at plus 30°F.

Description: Arranged side by side in multiples, Hudson Bay Module Utility Cabinets give combinations of any number of units for operation in any number of desired temperature ranges. In addition to providing improved temperature control by means of independent refrigeration and control systems, units make possible simultaneous testing of various samples in different temperature ranges. Mechanically-refrigerated and self-contained, unit requires only simple electrical connections for operation and is available in convenient 0.8 cu ft capacity. Refrigeration equipment is of the hermetically-sealed type. Cold chamber interior is of stainless steel construction and is available with or without cloud and pour tube assemblies. An adjustable thermostat is furnished, with which unit is controlled to close tolerance within a given temperature range.

Mechanically-refrigerated and self-contained test cabinet is available in models with operation from –100 to 0°F

(Cabinets are products of Refrigeration Systems, Inc., Dept. CP, 646 W. Washington Blvd., Chicago 6, Ill. . . . or for more information check CP 8468 on handy form, pages 2 and 3.)

Details of construction, operation cover constant temp equipment

Several types of water baths, incubators, ovens, and thermo-regulators are discussed and illustrated in 48-page publication. The operation, construction, and accessory parts are described for each

GAYCO CENTRIFUGAL SEPARATORS

GAYCO Separators, equipped with the adjustable centrifugal sizing fan — an exclusive GAYCO feature — make closer separations. Closer separations bring about higher production through efficient removal of the fines made by the mill. Closer separations bring about higher quality products by eliminating all undersirable oversize.

"TIMKEN BEARING EQUIPPED" GAYCO brings you all these:

Range 60 to 400 mesh
greater capacity
25 to 30% greater production
Cleaner Tailings
Uniform Products
Slow speed for slow wear
Quick and easy adjustments

If you have an exceptionally hard separating problem, TRY THE GAYCO.

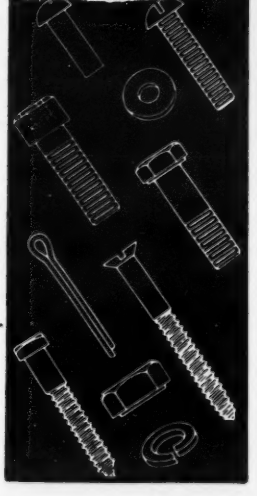
Universal Road Machinery Co.

Rubert M. Gay-Division
Factory and Laboratory, Kingston, N. Y.
117 LIBERTY STREET **NEW YORK 6, N. Y.**
Canadian Representative: F. H. Hopkins & Co., Ltd., 8500 Decarie Blvd., Montreal, Que.

When inquiring check CP 8469 on handy form, pgs. 2-3

STOP CORROSION with HARPER

EVERLASTING FASTENINGS BY THE DOZENS OR BY THE MILLIONS



If you use fastenings of brass, bronze, copper, Monel, aluminum or any stainless steel, you can get what you want from Harper. Over 7,000 items stocked—all backed by Harper's advanced metallurgists and skilled engineers. See your Harper Distributor.

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EVERLASTING FASTENINGS

The H. M. Harper Company
8241 Lehigh Avenue
Morton Grove, Illinois
Please send me Harper Catalog.

Name.....
Address.....
City.....*State*.....

When inquiring check CP 8470 on handy form, pgs. 2-3

piece of equipment in the above mentioned categories. Constant temperature control units, relays, and a series of analytical balances are also reported.

Bul 5B is issued by Central Scientific Co., Dept. CP, 1700 Irving Park Rd., Chicago 13, Ill. When inquiring specify CP 8471 on form, pgs. 2-3.

Box and muffle furnaces offered in wide range of sizes . . .

working temperature can be quickly changed to suit different jobs

Uses: Designed for use in analysis, control and production in chemistry, metallurgy and manufacturing.

Features: Designed for dual-purpose operation in high and low temperature ranges, units can be used for ashing, drawing, igniting, sintering in range from 600 to 2000°F and for sintering, melting, clinkering, fusing, and high-speed hardening in range from 2000°F into the high white.

Description: Burrell "Unit Package" box and muffle furnace units are offered in five models, varying from chamber size of 5 x 12½ x 4½" to 11 x 8¼ x 5". All heating chambers are designed for easy accessibility; doors are counterbalanced, double hung, and easily moved by means of a side handle. Heating chambers are lined with 3000°F refractory, and heat losses are minimized by thick laminated insulation — successive layers of brick and block. Not only are doorways of ample size and framed for strength with hard refractory, but roof is also formed from hard refractory plate which eliminates contamination from dropping particles. Total areas of working space range from 57¾ to 90¾ sq in. All models have silicon carbide heating elements, designed in rod shape and of modern type with self-cooling ends. Not only can working temperatures be varied quickly, up or down, but time required to heat up is shortened by utilization of a combination of extra large heating elements, ample transformer size, and insulation of low heat capacity.

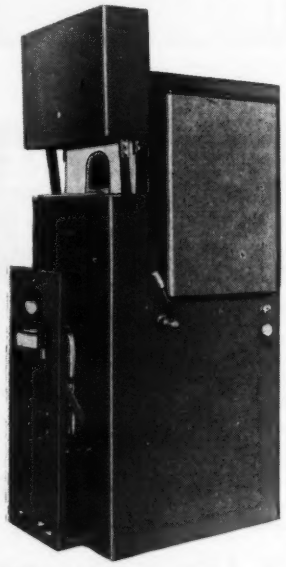
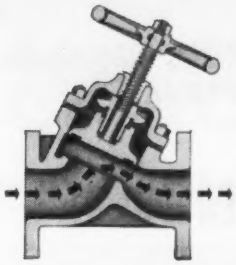


Photo shows easy access panel opened for inspection and servicing. Notice double hung, counterbalanced door, operated by means of side handle

(Products of Burrell Corp., Dept. CP, 2223 Fifth Ave., Pittsburgh 19, Pa. . . . or for more information check CP 8472 on handy form, pages 2 and 3.)



FOR SAFER CONTROL OF HARD-TO-HANDLE FLUIDS

CRANE Packless Diaphragm Valves

Now Available in New Materials

SCREWED ENDS, UNLINED Sizes ½ to 2 in.
Brass, Cast Iron, Aluminum, or 18-8 Mo body and disc. Furnished with neoprene, Buna N, and natural rubber diaphragm and disc insert.

FLANGED ENDS, UNLINED Sizes ½ to 6 in.
Cast Iron, Aluminum, or 18-8 Mo body and disc. Furnished with neoprene, Buna N, and natural rubber diaphragm and disc insert.

FLANGED ENDS, LINED Sizes 1 to 6 in.
Cast Iron body only. Lined with neoprene or hard natural rubber. Disc coated with neoprene or soft natural rubber.

Other body and disc materials, as well as linings, available on special order. Also sliding stem valves for automatic operators of all types.

WORKING PRESSURES—up to 150 pounds. Water, air, oil, or gas, 180°F. maximum temperature, depending on valve size and materials.

You asked for it—and now Crane gives you this outstanding Diaphragm Valve in a new wide choice of body, disc insert, and diaphragm materials—in unlined or lined patterns. Whichever is specified, Crane design gives you important advantages including—long diaphragm life . . . positive shut-off in case of diaphragm failure . . . less resistance to flow with minimum pressure drop . . . easy operation . . . simplified maintenance at lowest upkeep cost.

Full specification data is in your new Crane 53 Catalog—or ask your Crane Representative.

CRANE VALVES

CRANE CO., *General Offices:* 836 S. Michigan Ave., Chicago 5, Ill.
Branches and Wholesalers Serving All Industrial Areas

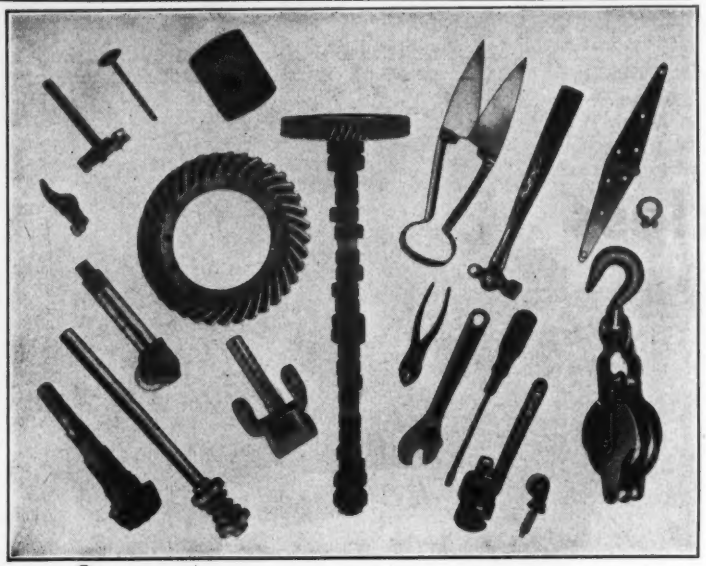
VALVES • FITTINGS • PIPE • PLUMBING • HEATING

When inquiring specify CP 8473 on handy form, pgs. 2-3

AMERICAN CHEMICAL PAINT COMPANY
AMBLER PENNA.

Technical Service Data Sheet

Subject: RUST PROOFING WITH PERMADINE®



Steel parts that have been Permadized and then "sealed" with a rust-preventive oil such as "Granoleum" are effectively protected from rust. And, if the oiled "Permadine" coating should be damaged, rusting will not spread beyond the area of exposure.

Note: Automotive and other rubbing parts subject to friction are usually given "Thermoil-Granodine" manganese-iron phosphate coatings for both wear-resistance and protection from corrosion.

DATA ON THE "PERMADINE" COATING	
Type of coating	Zinc phosphate
Object of coating	Rust and corrosion prevention
Typical products treated	Nuts, bolts, screws, hardware items, tools, guns, cartridge clips, fire control instruments, metallic belt links, steel aircraft parts, certain steel projectiles and many other components
Government Specifications	U.S.A. 57-0-2C; Type II, Class B MIL-C-16232, Type II U.S.A. 51-70-1, Finish 22.02, Class B AN-F-20 Navy Aeronautical M-364 JAN-L-548
Scale of production	Large or small volume; large or small work
Mathed of application	Dip Barrel tumbling, racked or basketed work
Equipment notes	Immersion tanks of suitable capacity. Cleaning and rinsing stages can be of mild steel. Coating stage can be of heavy mild steel or stainless steel.
Chemicals required	"Permadine" No. 1
Pre-cleaning methods	Any common degreasing method can be used, Alkali cleaning ("Ridosol"), Acid cleaning ("Deoxidine"), Emulsion-alkali cleaning ("Ridosol" - "Ridoline"); vapor degreasing, solvent wiping, etc., are examples. Acid cleaning may need to follow other cleaning methods if rust or scale is present.
Bath Temperature	190° - 205°F.
Coating time	20 - 40 minutes
Coating weight range	1000 - 4000 mgs. per sq. ft.
Technical Service Data Sheets	No. 7-20-1-2 T.M. No. 5

CHEMICALS ACP PROCESSES

WRITE FOR FURTHER INFORMATION ON "PERMADINE"
AND YOUR OWN METAL PROTECTION PROBLEMS

CHEMICALS ACP PROCESSES

When inquiring check CP 8474 on handy form, pgs. 2-3

LABORATORY

Permits use of tracer amounts of gamma emitters

Uses: Instrument is designed for efficient gamma-ray counting in clinical and laboratory applications.

Features: When used with lead shield and sample holder, instrument has high sensitivity which allows use of tracer amounts of gamma-ray emitters.

Description: Scintillation detector, Model DS-1, is provided with a thallium-activated sodium iodide crystal and has a plateau length of approximately 200 v. Manufacturer claims that with external directional shield in place, efficiencies of 33% or greater are obtainable using Cobalt 60, and 40% or greater using Iodine 131.

Unit is equipped with a removable directional shield, and has a built-in preamplifier which provides an output pulse in excess of 0.25 v.

(Unit is a product of Nuclear Instrument & Chemical Corp., Department CP, 229 West Erie Street, Chicago 10, Illinois . . . or for more information about this development, reader may simply check CP 8475 on handy Reader Service slip, pages 2 and 3.)

Oven circulates constant weight of air

Specially-designed laboratory and industrial oven provides a constant weight of air circulation at all temperatures. Unit is intended for use at temperatures up to 550°F.

As a result of loss in weight when heated, air is lighter and has less ability to transfer heat to specimens. By keeping air weight circulation constant as temperature rises, furnace offers greater overall oven efficiency, faster heating and more uniform specimens.

Specifications, features and principle of operation are described in 4-page bulletin. Bul 321 is issued by Blue M Electric Co., Dept. CP, 306-308 W. 69th St., Chicago 21, Ill. When inquiring specify CP 8476 on handy Reader Service slip between pages two and three.

TAKE A TIP FROM THE LEADERS

INSTALL VIKING
CHEMICAL PROCESSING PUMPS

The use of Viking Rotary pumps by many of the leaders in the chemical process field is your assurance of dependable, efficient pumping.

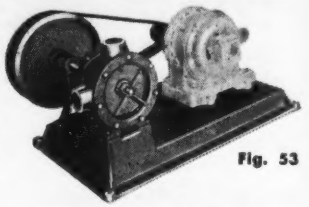


Fig. 53

V-Belt Motor Driven Unit
(Furnished with Belt Guard. Not Illustrated)

FOR THE JOB REQUIRING:
Fast, self priming
Smooth, even flow
Capacities from ½ to 1050 gpm
Pressures to 200 psi (heavy-duty)
Handling either thick or thin liquids, there you will find Vikings specified and successfully used.

VIKING AN HONORED NAME IN PUMPING

Ask for folder 53SCC today. It's your tip for good, efficient pumping.

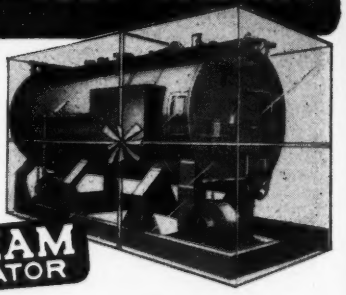
See Our Catalog in SWEET!

Viking PUMP COMPANY
Cedar Falls, Iowa

When inquiring check CP 8477 on handy form, pgs. 2-3

TROUBLE-FREE PACKAGE
for LOW-COST STEAM!

10 to 600 h. p.
15 to 200#
OIL or GAS



AMESTEAM GENERATOR

- Complete — ready to connect and operate.
- Saves labor — fully automatic.
- Saves fuel — 80% guaranteed efficiency.
- Easy maintenance — all parts readily accessible.

WRITE FOR FREE BULLETIN TODAY

AMES IRON WORKS INC.
BOX B-33
OSWEGO, N. Y.

AMES IRON WORKS
Box B-33, Oswego, N. Y.
Gentlemen:
Please send me further information on AMESTEAM GENERATORS and name of nearest representative.
NAME.....
COMPANY.....
ADDRESS.....
.....

When inquiring check CP 8478 on handy form, pgs. 2-3

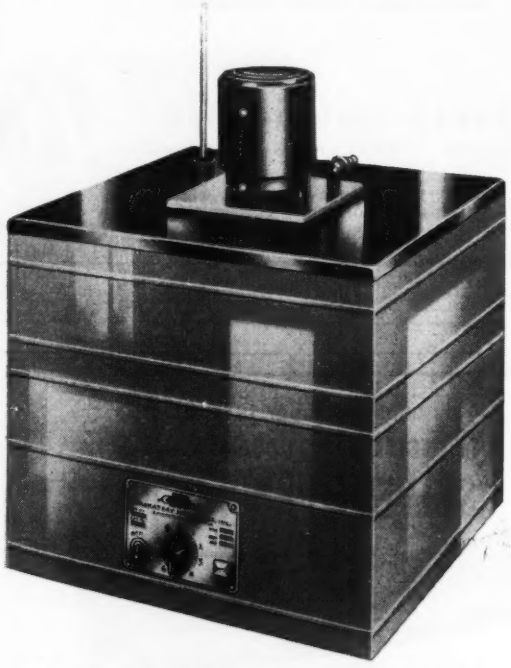
Circulating systems feature more temp stability . . .

have temperature range from room to 100°C; go lower with coil

Uses: For circulating liquids at controlled temperatures through refractometers, viscometers, polarimeters, condensers, distillation columns, colorimeters, or other instruments requiring circulation of tempered liquids.

Features: Large water capacity — 5-½ gal — to maintain temperatures easily within rated sensitivity at fastest circulating rate.

Description: Labline Constant Temperature Circulating System is available in two models: 1) sensitive to plus or minus 0.25°C, incorporating special hydraulic thermostat, and 2) sensitive to plus or minus 0.02°C with easy-to-set mercury regulator. Both units have identical dimensions — 15″ wide, 14″ deep, and 17″ high.



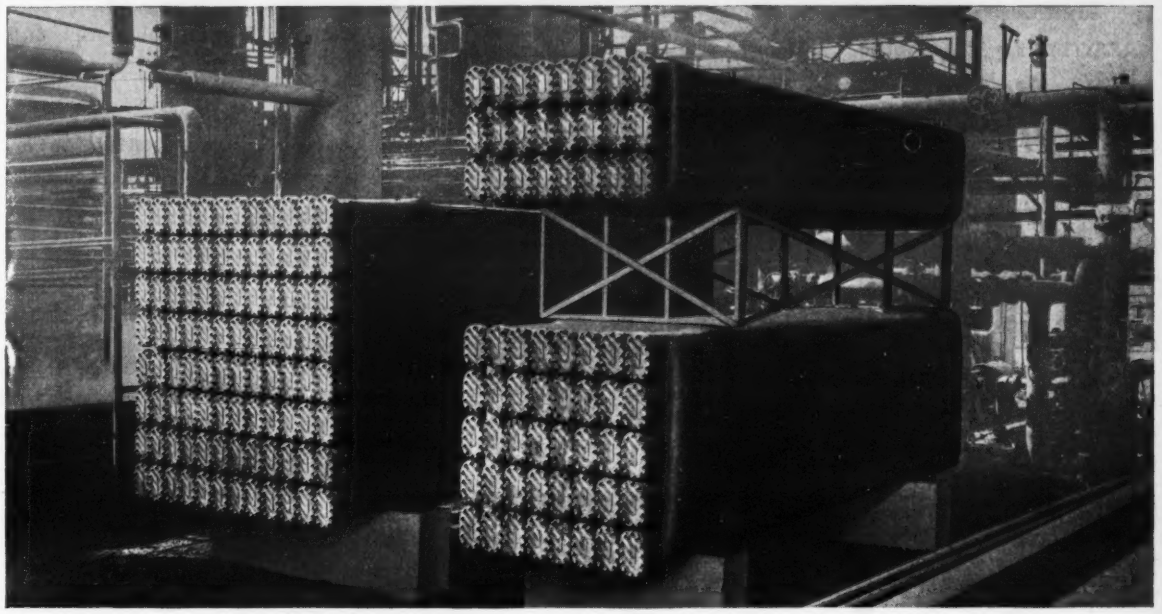
Stainless steel circulating system provides liquid at controlled temperature for variety of uses

Interior and exterior of units is polished stainless steel. Ball-bearing induction motor, 1/3-hp, is factory-lubricated and sealed. All bronze centrifugal pump is direct motor driven. Pump has a capacity of 3-½ gpm at zero head (when system and instruments are on same level) to 1-¼ gpm at 6′ head. Four serrated ¼″ hose connections provide inlet and outlet for cooling coil, and discharge and return for tempered liquid.

(Baths are products of Labline, Inc., Dept. CP, 217-221 N. Desplaines St., Chicago 6, Ill. . . . or for more information check CP 8479 on handy form, pages 2 and 3.)

Six Reasons Why

you should specify



BROWN FINTUBE *Sectional* HEAT EXCHANGERS

FLEXIBILITY: If plant requirements change — and this is not uncommon — a "bank" of Brown Fintube heat exchanger sections can be disconnected and reassembled in different series-parallel arrangement easily and on short notice. "Bundle type" exchangers are not flexible. For them a change in duty usually involves designing — and waiting — for a whole new unit.

NO OBSOLESCENCE: Brown Fintube Sections never become obsolete. They can be used in one exchanger after another. Sections not in use serve as "standby" or parts, for other sections on stream.

REDUCED FOULING: Brown Fintube sections transfer more heat per lineal foot at lower surface temperatures. This minimizes coking. Also the longitudinal passages control the material flow eliminating eddies and reducing fouling.

EASY CLEANING: reduces maintenance costs. By manifolding just one extra parallel stream into an exchanger, the entire unit can be operated continuously — always clean — without ever coming off stream.

REDUCED STORES: Avoids tying up thousands of dollars in spare parts, housing and handling them.

PROMPT DELIVERY: Standardization permits economical assembly line manufacture from standardized parts — and prompt delivery.

If you heat — or cool — liquids or gases in your plant, you'll get a lot of ideas from our Bulletin No. 512. Send for a copy!

HEAT EXCHANGE SURFACE
BROWN FINTUBE
HEAT TRANSFER PRODUCTS

BROWN FINTUBE CO.
Elyria, Ohio

• Integral One-piece Fintubes; Sectional Heat Exchangers and Coolers; Vertical Heaters for Bulk Storage Tanks; Tank Suction Heaters; Pressure and Suction Line Heaters; Process Tank Heaters; Fired Indirect Heaters and Special Types of Fintube Heaters and Coolers.

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When inquiring check CP 8480 on handy form, pgs. 2-3

QUALITY PELLETS

WITH LARGER TONNAGE PER EXTRUSION UNIT!

CAPACITIES TO

1½ Million Pellets Every 60 Seconds!

There is a wide range of sizes in Welding Engineers' line of Auxiliary Worm Extruders from laboratory models producing 125,000 pellets per minute to the largest model capable of extruding 1,500,000 pellets of 3/16" diameter every minute.

The Welding Engineers Auxiliary Worm Extruder is designed especially to handle hard-to-process materials . . . operating on a unique principle adapted to the special characteristics of any extrudable feed:

CLAYS CATALYSTS FILTER CAKES
DRUGS DIATOMACEOUS EARTH METAL ORES
CAULKING COMPOUNDS RUBBER ACCELERATORS
CARBON BLACK MIXES POLYISOBUTYLENE

At high speed, this extruder operates with positive feed action and with uniform extrusion normally unattainable on single worm type machines. For efficiency, for low-cost production, for improved quality . . . it's time to get acquainted with

WELDING ENGINEERS AUXILIARY WORM EXTRUDERS

SEND FOR THIS COMPLETE FOLDER

with descriptive data, illustrations of models and the complete story of the Welding Engineers Auxiliary Worm Extruder

WELDING ENGINEERS, INC.
NORRISTOWN, PENNSYLVANIA

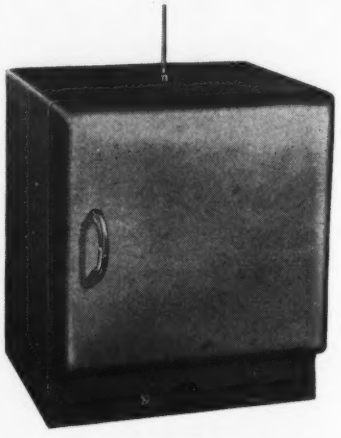
When inquiring check CP 8481 on handy form, pgs. 2-3

LABORATORY

Oven has no heaters inside working chamber

Uses: For all laboratory uses, such as baking, sterilizing, moisture tests, evaporating, heat treating, annealing and conditioning.

Features: Radiant wall principle of heating eliminates all heaters from working chamber.



Utility ovens feature streamlined design and radiant wall heating

Description: Labline Utility Radiant Wall Ovens are available in two sizes, with working chambers 13 x 13 x 13" and 18 x 20 x 17½". Constructed with a special heat barrier and 3" glass wool insulation, ovens have double-walled metal cabinet with full length piano-type door hinge, well rounded corners and no exposed nuts or bolts.

Temperature range is from 200°C. and special hydraulic thermostat has fully-enclosed contact points. Bottom shelf can be completely loaded, since there are no heaters inside the working chamber.

(Ovens are products of Labline, Inc., Dept. CP, 217-221 N. Desplaines St., Chicago 6, Ill. . . . or for more information check CP 8482 on handy form, pages 2-3.)

Company name and address

at end of each editorial article makes it easy to follow-up on ideas you read about in these columns . . . saves you time. Write direct or use the handy Reader Service slip.

THE EDITORS

POLYETHYLENE VINYL POLYSTYRENE

PLASTIC SCRAP

REPROCESSED SOLD BOUGHT

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Tanney-Costello, Inc.
DEALERS • CONVERTORS • GRADERS

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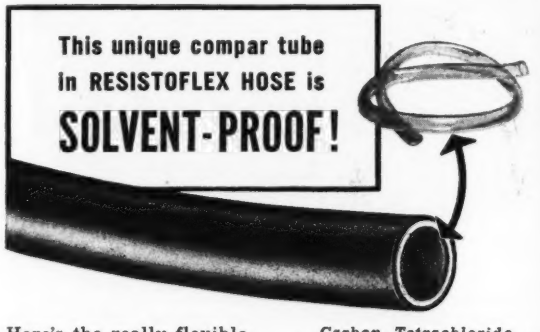
Phone: Blackstone 4148 • Cable: "COSTAN" AKRON

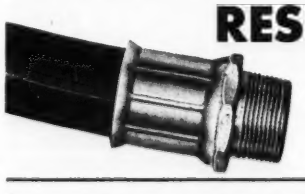
When inquiring check CP 8483 on handy form, pgs. 2-3

This unique compar tube in RESISTOFLEX HOSE is SOLVENT-PROOF!



Here's the really flexible, non-metallic line that can handle water-insoluble liquid and gaseous hydrocarbons with ease. Its high tensile compar tube provides high burst strength in addition to the remarkable impermeability to many solvents, oils, gases and chemicals which attack or swell other flexible synthetic materials. Just a few of the typical chemicals to which Resistoflex Hose is inert: *Benzene Hexachloride . . . Carbon Tetrachloride . . . Ether . . . Chloroform . . . Carbon Disulphide . . . "Parathion" . . . Toluene . . . Chloropicrin . . . Trichlorethylene . . . Styrene Monomer . . . "Chlordane" . . . Dibutyl Phthalate . . .* and others.

Resistoflex Hose also withstands vibration and constant flexing without fatigue. Can you use these advantages in *your* application? Write us about it, or for data. Sizes up to 1½" I.D. available, in bulk or with couplings.



RESISTOFLEX
CORPORATION
Belleville 9, New Jersey
•
SYNTHETIC FLEXIBLE PRODUCTS AND PARTS FOR INDUSTRY

When inquiring check CP 8484 on handy form, pgs. 2-3

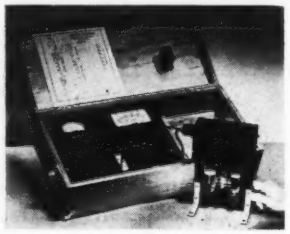
Self-contained instrument makes rapid, accurate determination of dissolved oxygen . . .

determinations can be made in 10 to 30 sec; correct within 5% for most solutions

Uses: Designed for simple, accurate determinations of oxygen in aqueous solutions. Useful in field tests to check oxygen content of oil field brines or sewage, or in laboratory of chemical process plants.

Features: Unlike the usual Winkler test for dissolved oxygen, unit is not subject to interference by dissolved iron, calcium, magnesium, or organic matter. Rotating electrode assembly is ruggedly built on a detachable frame and can be used for other analyses if desired.

Description: The Dorber Dissolved Oxygen Analyzer is entirely self-contained in a cabinet 22 x 11 x 7 inches. Utilizing readily obtainable batteries, analyzer uses an amperometric principle in which minute traces of dissolved oxygen are reduced at a rotating platinum cathode. Sample to be analyzed is placed in a plastic container which is then attached to the instrument. This provides a meter reading which is converted to ppm dissolved oxygen by means of a calibration chart.



Compact unit for determining dissolved oxygen features detachable rotating electrode

(Instrument is a product of Dorber Co., Dept. CP, 7741 W. Palatine Ave., Chicago 31, Ill. . . . or for more information check CP 8485 on form, pgs. 2-3.)

Provides convenient method of mounting oscillographs

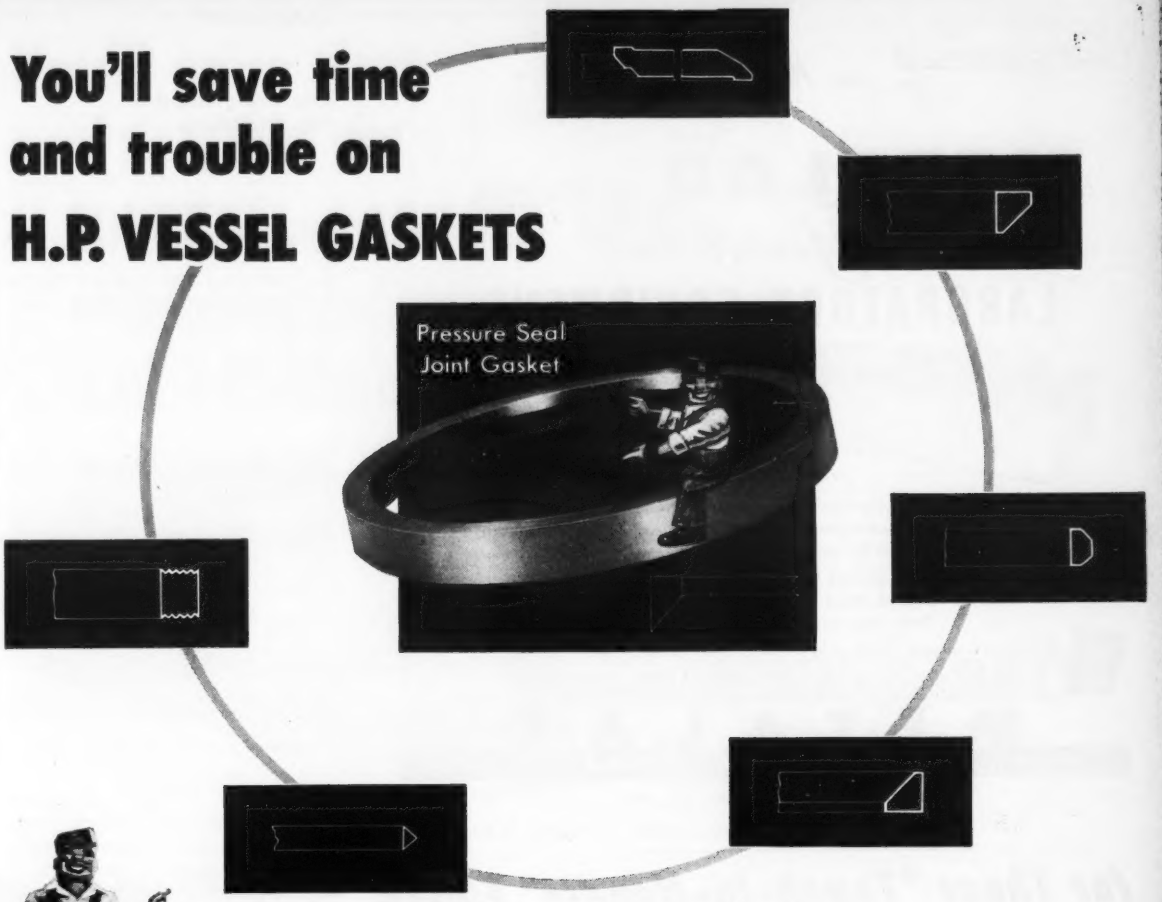
Uses: Designed to provide a rigid mount for instrument in standard 19" relay racks.

Features: Provision has been made for bolting instrument cabinet to channels fastened to mounting adapter, so that entire relay rack may be moved with the instrument in place.

Description: The Rack Mounting Adapter Type 2598 is designed for use with DuMont Types 303, 303-A, 303-AH and 322 cathode-ray oscillographs. When mounted in adapter, units present a neat appearance, yet are completely accessible. Adapter bolts to rack frame and provides a sufficiently large front opening to permit all but the front panel of the oscillograph to pass through. Channels are fastened to the adapter to provide support for the instrument.

(Adapter is a product of Instrument Div., Allen B. DuMont Laboratories, Inc., Dept. CP, 1500 Main St., Clifton, N. J. . . . or for more information check CP 8486 on handy form, pages 2 and 3.)

You'll save time and trouble on H.P. VESSEL GASKETS



...when J-M Goetze gasket specialists make them for you

When you need gaskets such as those above, which were made for pressure vessel service over 5000 psi, consider this. It takes less time and trouble to turn the job over to J-M Goetze —an organization that has specialized in gasket design and manufacture for 67 years. And it usually costs less in the long run.

Goetze engineers can select the right style for maximum sealing efficiency. They know the correct metals and other factors required for efficient, long-lasting gaskets.

Goetze Gaskets are made exactly to the last detail of your specifications and conditions. They are made to craftsmen's perfection . . . with modern machine tools, some of which were specially designed by Goetze for gasket manufacture.

If you need gaskets for high pressure vessels or similar applications, send us a drawing or template for quotation. Or write for further information to Johns-Manville, Box 60, New York 16, New York.

Johns-Manville *Goetze* GASKETS

THERE'S A JOHNS-MANVILLE PACKING AND GASKET FOR EVERY SERVICE

When inquiring check CP 8487 on handy form, pgs. 2-3

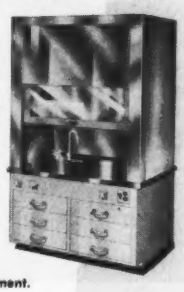
for your New Laboratory, or ... for Expansion

METALAB offers you

the Finest in

LABORATORY EQUIPMENT

WITHIN YOUR BUDGET



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- *How Interchangeable Sectional Units are used.*
- *How to get the most for your laboratory budget.*

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METALAB *Equipment Corp.*

230 Duffy Ave., Hicksville, L. I., N.Y.

When inquiring check CP 8488 on handy form, pgs. 2-3

for Those "Tough-to-Handle" Fluids

✓ NO PACKINGS • NO LEAKAGE
✓ NO CONTACT BETWEEN FLUID HANDLED AND WORKING PARTS
✓ EASY TO CLEAN
✓ LOW COST MAINTENANCE
✓ MADE OF ANY MATERIAL
✓ AMPLE PRESSURE
SHRIVER DIAPHRAGM PUMP

Are your process fluids corrosive, abrasive, thick, heavy, viscous or otherwise difficult to handle? Do they clog, build up on or quickly destroy the pump's working parts and increase operating costs?

If so—then let the Shriver Diaphragm Pump prove how it can really "take it"—no matter how difficult the material—save in over-all maintenance cost and in prolonged pump service life. Write for Bulletin 137.

Shriver Diaphragm Pumps

T. SHRIVER & COMPANY, Inc., 846 Hamilton Street, Harrison, N. J.

When inquiring check CP 8489 on handy form, pgs. 2-3

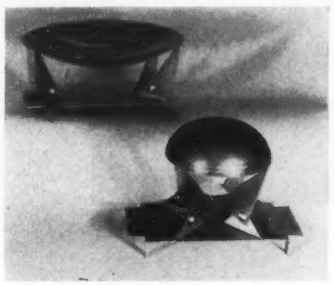
LABORATORY

Kiln firing stand has adjustable "wings" . . .

eliminates need for graded trivet sizes

Uses: Holds objects of any shape for kiln firing. Though designed for enameling and ceramics, can be used for general high temp work.

Features: Expandable kiln trivet holds objects from 0 to 7½ inches in size. Permits good heat circulation and leaves no stilt marks.



Adjusts to various sizes up to 7½"

Description: "Wings" of trivet can be angled or reversed to touch work on uncoated or non-softening surfaces. Object to be heated is held by knife edges or points. Oversized wings hold work up to 12 inches in size. Single adjustable unit handles objects whose size variation would require 5 conventional (non-adjustable) trivets.

Unit is constructed of stainless steel and brass.

(Information about Adjustable Trivet can be obtained from Dept. 38, Kenneth F. Bates, Dept. CP, 7 E. 194th St., Euclid 19, Ohio . . . or for more information check CP 8490 on form, pgs. 2-3.)

Measuring instruments described in bulletin

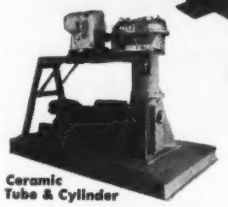
Complete line of electrical measuring instruments is described in 2-page bulletin. In addition to ohmmeters, voltammeters, and current transformers, units for insulation resistance, ground resistance, and high potential dielectric strength testing are illustrated and described.

Bul 10AA is issued by Associated Research, Inc., Dept. CP, 3758 W. Belmont Ave., Chicago 18, Ill. When inquiring specify CP 8491 on form, pgs. 2-3.

CHAMBERS ***Special-Purpose***

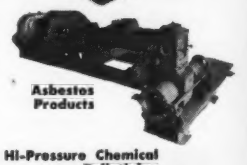
EXTRUDERS

Built to Your Requirements



Hi-Pressure

Ceramic Tube & Cylinder



Asbestos Products

Catalyst Extruder

Hi-Pressure Chemical Pelletizing

CHAMBERS BROTHERS COMPANY

52nd & Media Sts. PHILADELPHIA 31, PA.

When inquiring check CP 8492 on handy form, pgs. 2-3

Q. **What is the simplest means of producing suction pressures down to .002"?**

A. **The I-R STEAM-JET EJECTOR**

Producing suction pressure by means of a steam jet and venturi-shaped diffuser, it operates *without any moving parts!* There's nothing mechanical to wear out—nothing to lubricate—nothing to require adjustment or replacement. No vibration, either. And little or no foundation is required for installation.

I-R Steam-Jet Ejectors are designed for high sustained efficiency with practically no attention or maintenance. They are available in single-stage, two-stage and multiple-stage types for vacuum pressures down to .002" Hg absolute—in any desired capacity, for handling any mixture of air, gases and vapors.

Pre-coolers, intercondensers and aftercondensers can be supplied as required for any application. For further information, send for Bulletin 9013A. No obligation, of course.

684-4

11 Broadway, New York 4, N. Y.

Ingersoll-Rand

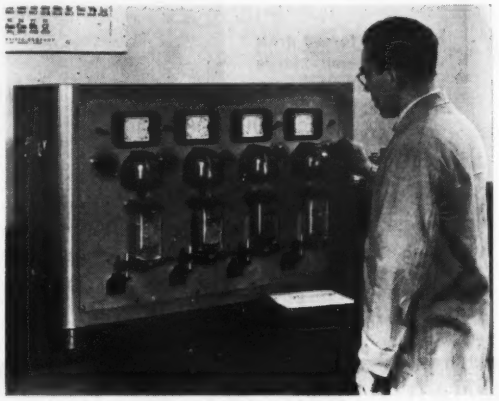
When inquiring check CP 8493 on handy form, pgs. 2-3

Multi-station electroanalysis unit offers speed and convenience plus increased power . . .

permits separate or duplicate analyses to be run simultaneously

Uses: Routine electroanalysis applications.

Features: Designed with multiple spindles or stations, each equipped with its own independent components, unit permits separate (or duplicate)



Four separate (independent or duplicate) analyses can be run simultaneously with electroanalysis unit

analyses at the same time. In addition to offering increased power, unit holds AC ripple to less than 2%.

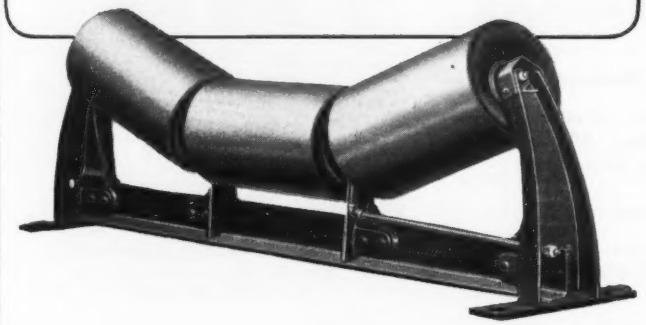
Description: Available in both two-spindle and four-spindle models, the Fisher Electro-Analyzer permits greater flexibility of operation by having each spindle or station equipped with its own components. For close temperature control a 200-w thermostated heater can be attached to the same vertical support that also holds the beaker support. In addition, a stirring motor is located at each sample station, and its two chucks will accommodate either glass stirrers or platinum stirring electrodes. Motor speed is 650 rpm and was selected to achieve speediest results.

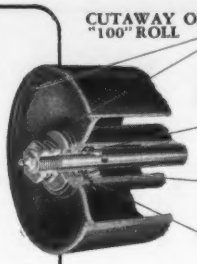
Accessories for unit include many different types of stirrer-electrode combinations — from stationary platinum electrodes and glass stirrer to "basket" or "spiral" type electrodes or stirring electrodes. Design of unit permits the use of different types of electrode combinations on different spindles at the same time.

A Mercury Cathode Cell Kit eliminates time- consuming pre-analysis separations. Undesirable elements in a sample are simply plated out on mercury, and the mercury is withdrawn from the cell. Unit is compactly housed in a single sturdy case attractively finished in gray hammertone. Increased power is offered by unit — 10 v at 10 amp.

(Unit is a product of Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . . or for more information check CP 8494 on handy form, pages 2 and 3.)

Why LINK-BELT IDLERS require minimum lubrication and adjustment




CUTAWAY OF "100" ROLL
Concentrically counterbored and journaled full-length central tube and counterbored roll shell are continuously welded to dished heads to maintain balance and bearing alignment.
Precision roller bearings maintain alignment.
Large grease reservoir prolongs lubrication intervals.
Grease-in-dirt-out, cartridge type unit seal preserves lubricant. No springs, no loose parts, no sliding metal-to-metal contact.

BY MINIMIZING maintenance . . . holding "down-time" to a new low . . . reducing power requirements —Link-Belt Roller Bearing Idlers save you money.

And, because of standardized design, Link-Belt gives you the famous "100" Idler or the heavy-duty "200" Idler at a cost lower than you'd expect. You can choose from the full Link-Belt line of troughing, impact-cushioning, belt training and flat belt idlers in a wide range of roll diameters and belt widths. A complete line to meet any requirement.

Remember, too, Link-Belt offers a complete line of other belt conveyor components—all types and sizes of take-ups, pulleys, trippers, back-stops and drives. Coupled with our broad belt conveyor engineering experience, this assures you of the right equipment for your handling requirement.

LINK-BELT

ROLLER BEARING IDLERS

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in Principal Cities. 12.549

When inquiring check CP 8495 on handy form, pgs. 2-3

VACSEAL

Solids and Acid PUMPS

Now Available in the U. S.

NOW you can have Vacseal Pumps on the job, available with neoprene, silicone and natural rubber linings — acid or alkaline application. VACSEAL — the virtually glandless pump that eliminates impeller adjustments and requires no sealing water to protect glands and clearance spaces. Capable of handling suction lifts up to 12 feet. V-belt drive insures correct speed and smooth non-surging operation.

Fast and Easy Dismantling

The accompanying view of 2" rubber lined Vacseal Pump, with suction cover and casing removed, shows simplicity of design. Write today for free Bulletin PB-52 that fully describes and illustrates.

Leaders in Experience & Service

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Agents In All Principal Foreign Mining Districts

When inquiring check CP 8496 on handy form, pgs. 2-3

What Is "Communication by Telescriber"?

(Reading time — 80 seconds)

WHAT Is a Telescriber?

A telescriber is a communication instrument which instantly transmits messages in the sender's own handwriting, from one point to one or more remotely located stations.

WHERE Are Telescriber Systems Used?

In any organization (regardless of size) where there is a need for instant, frequent, accurate written contact between departments or buildings.

ARE ALL Messages Received at Each Remote Station?

Selector keys permit complete system flexibility. Messages are received only by those stations chosen by the writer. All messages and signatures are in the same handwriting as the original.

CAN BUSINESS Forms Be Used in the Telescriber?

Yes. The TelAutograph 'Instan-Form' telescriber is available where instant communication on business forms is desired.

WHAT ARE Some Accepted Uses of TelAutograph Telescribers?

Production and Quality Control • Materials Handling • Sales Order • Maintenance Control • Dispatching • Central Files • Work-In-Process, etc.

CAN I Determine Whether a Telescriber System Would Improve Our Operation?

A "Communications Guide" is available without cost to aid you in analyzing your different communication problems.

CAN WE Get Further Assistance Without Becoming Obligated?

Yes. It is standard TelAutograph Corporation policy to have its field staff aid in making anaylses and offering recommendations. This is done without pressure or obligation.

HOW CAN We Obtain the "Communications Guide" and Other Information?

Send your request to Department H-33 at the address below. It will be honored promptly.

TelAutograph CORPORATION

16 West 61st Street • New York 23, N. Y.

Telescriber Service TelAutograph*

TELAUTOGRAPH Instan-Form TELESCRIBERS

*Trade Mark

When inquiring check CP 8497 on handy form, pgs. 2-3

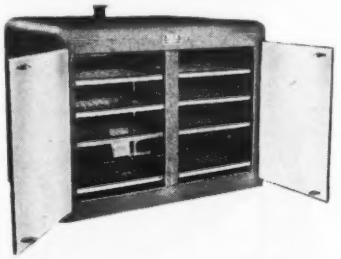
LABORATORY

Allows size separation of various products during drying . . .

divided into 8 compartments

Uses: Useful for baking, drying, or pre-heating operations. Particularly suitable for moisture stabilization and storage of low hydrogen stainless steel, hardenable steel and other welding electrodes.

Features: Eight compartments allow



Doors of portable electric oven open to give access to 8 compartments, allowing separation of different sizes or types of products during drying

for separation of different sizes or types of products.

Description: Incorporating fan-driven forced circulation of air which forces moisture out of unit, portable electric oven — Model PL 2A — measures 30 x 25 x 24", and inside dimensions are 28½ x 24 x 20½". Shelves are of expanded steel, and exterior is heavy gage steel, contour formed for strength. Insulated with asbestos, unit has gray wrinkle, baked enamel finish with plated hardware.

Adjustable damper controls temperature, and adjustable control for temperature extends to 325°F. Unit can be equipped with outside reading thermometer; 60 min, 6 hr, or 12 hr timer; red pilot light that shows when heating elements are on; oven stand; and thermostat control.

(Product of Grieve-Hendry, Inc., Dept. CP, 1815 W. Lake St., Chicago 12, Ill. . . . or for more information check CP 8498 on handy form, pages 2 and 3.)

PROCESSING & ENGINEERING DATA Section on pages 212, 214, 216, & 218

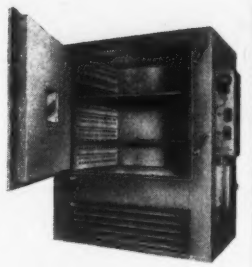
Hotpack TRADE MARK

SEND FOR CATALOG

OVENS For INDUSTRY

Range ROOM TEMP. to 600°F.

Temp. Dif. 5°F.



HOTPACK forced draft ovens permit large loads and quick treatment with each article receiving the same amount of heat.

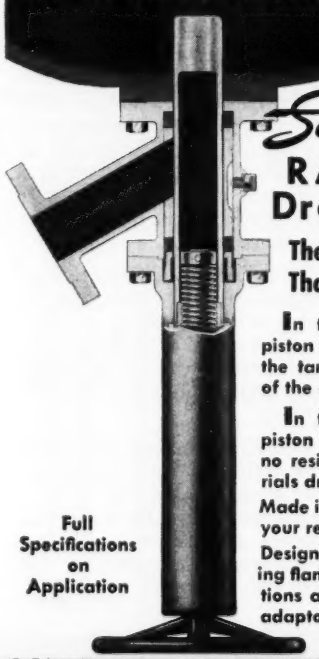
These units are especially effective in baking, sterilizing, heat treating, and conditioning, dehydrating and aging where uniform temperatures of heavy loads or large quantities are required.

Capacities 12 cu ft to 250 cu ft.

THE ELECTRIC Hotpack COMPANY, Inc.
5033 COTTMAN STREET, PHILADELPHIA 35, PA

When inquiring check CP 8499 on handy form, pgs. 2-3

NO RODDING NECESSARY!



Strahman

RAM TYPE Drain Valves

The Only Drain Valve That Cannot Clog Up!

In the closed position the piston or ram extends up into the tank, preventing plugging of the outlet.

In the open position with piston fully retracted, there is no resistance to flow of materials drained from the tank.

Made in any cast metal to meet your requirements.

Designed for bolting to existing flanges. For special adaptations and for jacketed vessels, adaptor pads are available.

Full Specifications on Application

STRAHMAN VALVES, INC., 16 HUDSON STREET, NEW YORK 13, U.S.A.

When inquiring check CP 8500 on handy form, pgs. 2-3

Measures luminous transmittance, haze of transparent plastics with pivotable sphere . . .

measurement unit and galvanometer can be used with other exposure heads

Uses: For measurement of haze and luminous transmittance of transparent plastics and other materials according to ASTM Method D1003-49T.

Features: Method uses an integrating sphere to gather and measure the small amount of light diffused by a nearly transparent plastic. ASTM Method D672-45T computes haze as a result of measurements of the difference between two large values of transmittance. Therefore, uncertainty of the haze value thus obtained is frequently greater than a direct observation of the diffused light.

Description: Designed to permit direct measurement of diffused light values, the Hunter Pivotable-Sphere Hazemeter utilizes an integrating sphere which turns between two positions on a pivot under the specimen window. In one position the directly-transmitted beam (projected from the source aperture by a lens with no accompanying ghost images) falls on the sphere wall so that all transmitted light is retained within the sphere and measured. In the other of the two positions, this beam passes out the exit window and into the light trap so that only the diffused light is retained with the sphere. A simple calculation gives an appropriate value for haze in per cent.

The complete apparatus consists of an exposure device, which incorporates a source, condensing lenses, source aperture, luminosity filter, measurement photocell, light baffles, light trap, sphere, comparison photocell, housing, and holder for stationary specimens; and a measuring device with an accompanying galvanometer. The measuring device may be used with various exposure heads to measure gloss, 45-0 degree directional reflectance, and other photometric properties of materials.

(Unit is a product of Henry A. Gardner Laboratory, Inc., Dept. CP, 4723 Elm St., Bethesda, Md. . . . or for more information about this development, reader may simply check CP 8501 on handy Reader Service slip between pages 2 and 3.)

Market laboratory-grade polyethylene glycols

Two laboratory-grade polymers of ethylene glycol, recently announced by manufacturer, are useful as emulsifiers, water-soluble lubricants, conditioners and finishing agents. When polyethylene glycol of molecular weight 400 is reacted with one mole of a fatty acid, such as stearic acid, an ester results that forms a colloidal dispersion in water. Both the glycol and the ester can be of use as laboratory chemicals to formulators of pharmaceuticals, cosmetics, plastics and inks.

(Chemicals are products of Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . . or for more information check CP 8502 on handy form, pages 2 and 3.)

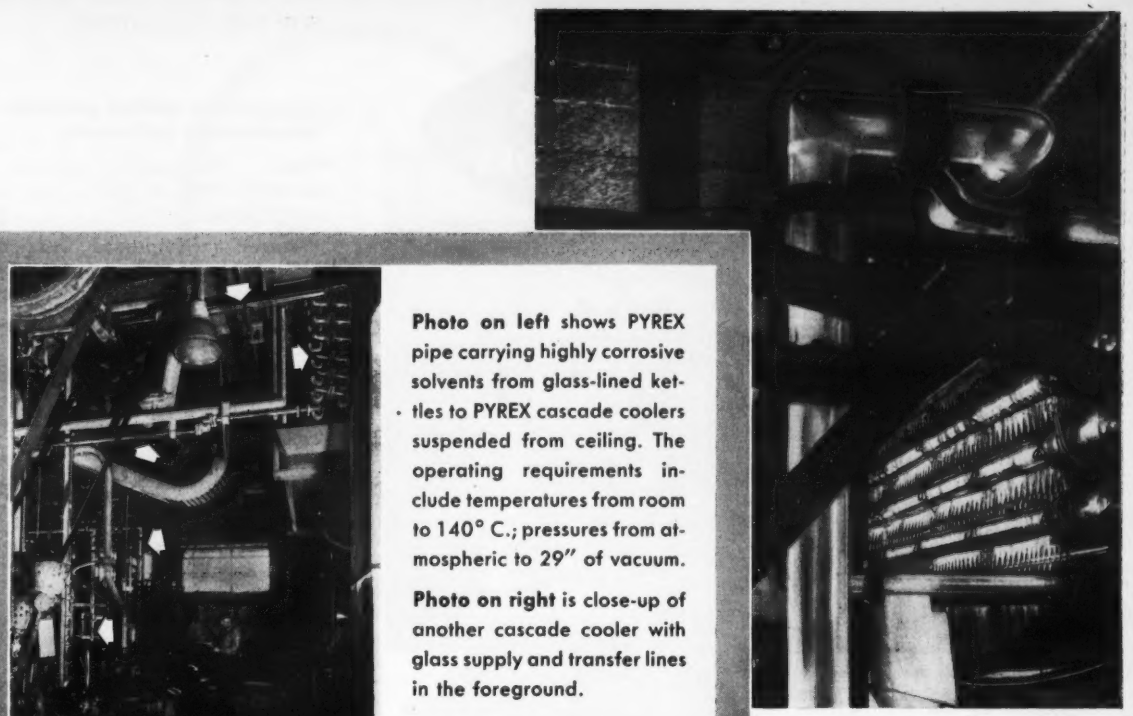


Photo on left shows PYREX pipe carrying highly corrosive solvents from glass-lined kettles to PYREX cascade coolers suspended from ceiling. The operating requirements include temperatures from room to 140° C.; pressures from atmospheric to 29" of vacuum.

Photo on right is close-up of another cascade cooler with glass supply and transfer lines in the foreground.

Why General Aniline and Film uses PYREX® brand Pipe and Cascade Coolers to handle highly corrosive acids

At the Grasselli, N. J. plant of General Aniline and Film Corporation, corrosives mean such solvents as ethyl, methyl and isopropyl alcohols, benzene, acetone, petroleum ether, heptane, and pyridine. These are volatile and inflammable as well as corrosive and carry over corrosive acid vapors in distillation.

Experience has proved that no other piping material, regardless of cost, can match the effectiveness of PYREX brand "Double-Tough" glass pipe for handling these solutions. General Aniline originally tried another corrosion-resistant piping material which lasted "for one batch of one product, more or less," corroding out in a day or so with corresponding product contamination.

During the year when PYREX pipe and PYREX cascade coolers have been in service in this plant they have required no maintenance. They stand up to the severe service. Their transparent walls also permit the plant men to watch the flow of materials and, in between batches, to be sure the lines are clean.

If you are handling corrosive or sensitive liquids, don't gamble. Send for the facts today on the remarkable corrosion-resisting and non-contaminating properties of PYREX pipe and cascade coolers.

CORNING GLASS WORKS
CORNING, N. Y.
Corning means research in Glass

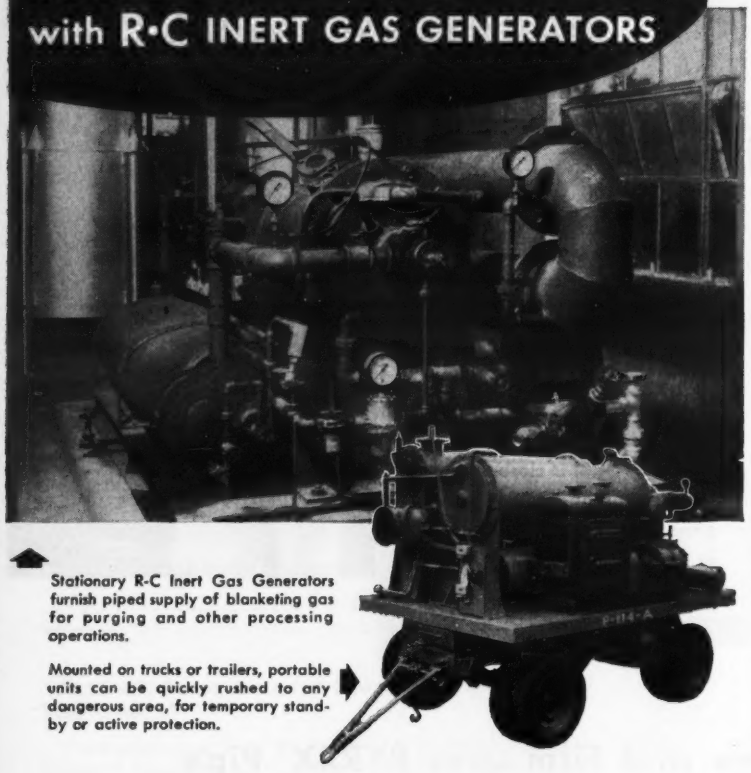
CORNING GLASS WORKS • DEPT. CP-3, CORNING, N. Y.

Please send me the printed information checked below:
- ☐ "PYREX brand Glass Pipe in the Process Industries" (EA-1)
- ☐ "PYREX brand "Double-Tough" Glass Pipe and Fittings" (EA-3)
- ☐ "Pyrex Cascade Coolers" (PE-8)

Name.....
Title.....
Company.....
Street.....
City.....
Zone..... State.....

When inquiring check CP 8503 on handy form, pgs. 2-3

REDUCE EXPLOSION RISKS with R·C INERT GAS GENERATORS



Stationary R-C Inert Gas Generators furnish piped supply of blanketing gas for purging and other processing operations.

Mounted on trucks or trailers, portable units can be quickly rushed to any dangerous area, for temporary stand-by or active protection.

Where materials or processes may cause explosion-produced fires, such hazards can be greatly lessened by stand-by R-C Inert Gas Generators.

From stationary or portable units, a continuing flow of inert gas will blanket dangerous areas or can be used for purging explosive gas or liquid lines. Using either oil or gas as fuel, they operate at very low cost. Frequently, the comparatively small investment can be absorbed by more favorable insurance rates.

Units are available in capacities from 1,000 cfh to 50,000 cfh, with characteristics to match specific requirements. Write for details on how your fire and explosion risks may be reduced with R-C Inert Gas Generators . . . built by the specialists in equipment to handle gas and air.

ROOTS-CONNERSVILLE
Exclusive Specialists in Handling Gas and Air

ROOTS-CONNERSVILLE BLOWER A DIVISION OF DRESSER INDUSTRIES, INC. 533 Richland Ave. • Connersville, Indiana

When inquiring check CP 8504 on handy form, pgs. 2-3

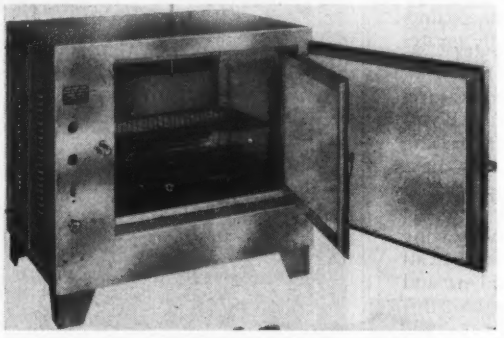
FOR THE LABORATORY

Counterflow baffles promote temperature uniformity . . .

Uses: Designed for any and all tests involving 90-100% RH at from 4 up to 70°C dry bulb temperature.

Features: Improved temperature uniformity and saving on cooling water when testing at temperatures below the ambient temperature.

Description: Constant temperature-humidity cabinets incorporate counterflow baffle which promotes and maintains a direct, definite, and vigorous circulation of the chamber atmosphere. In addition, this affords a saving on cooling water when testing at temperatures below the ambient temperature.



Available in four sizes, test cabinets feature interior and exterior construction of stainless steel

Available in four standard sizes, from 1 to 9 cu ft chamber capacity, units have an automatic hydraulic electric thermostat which controls temperature with a response sensitivity of plus or minus ½° centigrade.

Interior and exterior are constructed of stainless steel, and units are available in standard voltages. Wattage consumption is from 450 to 1250. All wiring is complete and meets NEC specifications.

(Cabinets are products of Blue M Electric Co., Dept. CP, 306-08 W. 69th St., Chicago 21, Ill. . . . or for more information check CP 8505 on handy form, pages 2 and 3.)

Gives rapid, precise measurement of small color differences . . .

tristimulus colorimeter allows 3 color values to be read from potentiometer rheostats

Uses: Designed to give rapid and precise measurement of color and color differences of various powder, opaque liquid, bulk or non-rigid, and cloth specimens.

Features: Photocell windows and measuring circuits have been selected so that three values of color are read directly from 10-turn potentiometer rheostats. Feature of circuit is manner in which currents from the photocell pairs responding to chromatic dimensions of color are adjusted to

PARTIAL LIST OF

materials processed

IN SPROUT-WALDRON UNITS

HARD & FRIABLE

ABRASIVES
AMMONIUM CHLORIDE
BAUXITE
GLASS
BETA-NAPHTHYLAMINE
BEANS
CANDY (HARD)
CHALK
CHARCOAL
COKE
COAL TAR PITCH
CLAM & OYSTER SHELLS
DRIED GELATIN
GLUE
SINTERED IRON OXIDE
LIME
SELENIUM
RESINS
WOOD ROSIN
WELDING FLUX
HARD RUBBER
PHONOGRAPH RECORDS
PLASTIC SCRAP
MILL SCALE

COCONUT SHELLS
CRACKERS
DOG BISCUITS
EGG SHELLS
FLOOR TILE
SALT
SODIUM NITRATE
MANGANESE DIOXIDE
TRI CALCIUM PHOSPHATE
GRAPHITIC SCHIST

SOFT & PLIABLE

CORK
FRUIT SKINS
PARA-DICHLOROBENZENE
SPONGE RUBBER
ASPHALT SHINGLES
NATURAL SPONGES
WAXES
GASKET SCRAP
RAISINS
SOFT RUBBER PRODUCTS
PLASTIC SCRAP
TIRE SCRAP
GRAINS
VEGETABLES
LINOLEUM
BENZENE HEXACHLORIDE
FILTER PRESS CAKE
SPICES
WHEY
YEAST
DDT

FIBROUS

ALPHA PULP
ALFALFA
ANIMAL GLANDS
ALKALI CELLULOSE
BARK
BEET PULP
BAGASSE
ASBESTOS
BARBASCO ROOT
COTTON
FELT
FLAX
FIBERBOARD
FIBERGLAS
HEMP
GLASS WOOL
KAPOK
JUTE
LEATHER
PEAT MOSS
PALMETTO
RAG CLIPPINGS
ROPE & STRING
RAMIE
TIRE FIBER
RUG SCRAPS
WOOD CHIPS
TOBACCO
WASTE YARN
NYLON FIBERS
RAYON FIBERS

SOLIDS & LIQUIDS

MOLASSES FEEDS
ACETIC ACID—SODIUM ACETATE
STARCH & HYDROCHLORIC ACID
INSECTICIDE BLENDS
POWDERED HAND SOAP FORMULAS
ANILINE SLUDGE—WATER
CEROUS HYDROXIDE—WATER
CLAY—WATER
COTTONSEED MEAL—MOLASSES
FERTILIZER—WATER
MOLYBDIC OXIDE—OIL
VANADIC OXIDE—OIL
PEAT MOSS—MINERAL OIL
SEWAGE SLUDGE—WATER
SUGAR—STARCH—WATER
AMMONIUM CHLORIDE—WATER
TITANIUM DIOXIDE—MOLASSES
SULFUR—PINE TAR
ALUMINUM OXIDE—CATALYST SOLUTION

SPROUT-WALDRON
SPECIAL FACILITIES
• Fabricating • Machining
• Custom Founding • Woodworking
• Laboratory Testing

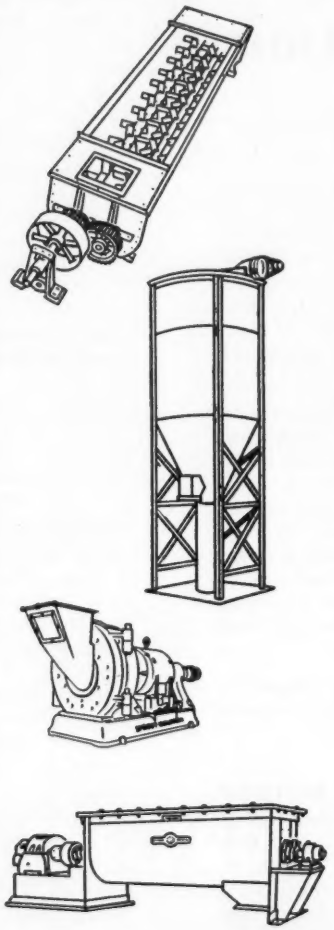
FOR ADDRESS SEE →

You Name it— We Mix it!

SPROUT-WALDRON

EQUIPMENT AND SYSTEMS FOR

- INTER-BATCH MIXING
- CONTINUOUS MIXING
- BLENDING, ETC.



Sprout-Waldron can give you the solution to practically any problem in mixing or blending. The wide variety of basic Sprout-Waldron units can perform an almost endless number of operations. Their field of application extends over a wide range of dry and semi-dry materials, also liquids. Mixing pulverized limestone, blending insecticide dusts, blending hydrochloric acid with starch for dextrines and mixing organic dyestuffs are only a few of the functions performed by this equipment.

Sprout-Waldron widens the range of application of these standard units in *two* ways. First, any standard unit can be "adaptioneered" or modified to meet specialized requirements. Second, individual units can be combined in series to perform the most complex and varied types of "unit operations."

Today, this Sprout-Waldron equipment is being used to do thousands of the toughest mixing and blending jobs in plants of the chemical, the processing and many other industries. Why not check the list of materials on the adjoining page? If you are processing any of these, or similar, materials, here is what Sprout-Waldron offers you: 1. *Equipment covering a wide scope of processes and applications.* 2. *A broad background of experience in solving many types of processing problems.* 3. *Complete facilities for engineering, pilot testing and fabrication.* Write to: Sprout-Waldron & Co., Inc., 10 Logan Street, Muncy, Pennsylvania.

SPROUT-WALDRON

Manufacturing Engineers

MUNCY • PENNSYLVANIA

314

MODERN EQUIPMENT FOR: **Size Reduction • Mixing and Blending • Bulk Materials Handling • Product Classification • Pelleting & Cubing**

When inquiring check CP 8506 on handy form, pgs. 2-3

correspond to visual sensation at different levels of reflectance.

Description: The Hunter Color and Color-difference Meter is a tristimulus colorimeter measuring color on three scales which give uniform measures of visual perceptibility of differences between colors. The apparatus is divided into two parts: 1) an exposure unit containing light source, mounting for test specimens, and means for viewing test specimens with different photocells; and 2) a measuring unit containing potentiometer rheostats, switches, and other components for recording values of photocell current on scales proportional to color.

In operation, apparatus compares unknown specimens with standards of predetermined color characteristics. When the three rheostats are set to values of some standard color and a specimen of somewhat similar color is placed in exposure position, deflections of the current-detecting galvanometer then show magnitude of color difference between specimen and standard on 3 scales.

Instrument gives three numbers for each color measured. Either R_d (45°0° luminous reflectance) or L (visual lightness) is given on one scale, depending on type of measuring circuit selected by user. The other two scales measure "a", which is redness when positive, gray when zero, and greenness when negative; and "b", which is yellowness when positive, gray when zero, and blueness when minus. Unit of color measurement for these three scales is the NBS unit of color difference devised by Judd.

Various accessories available for use with the meter include: 1) lenses for small test areas, 2) specimen viewer, 3) spring return galvanometer switch, 4) attachment for color by transmitted light, and 5) exposure heads for measurement of gloss and other photometric properties.

(Product of Henry A. Gardner Laboratory, Inc., Dept. CP, 4723 Elm St., Bethesda 14, Md. . . . or for more information check CP 8507 on form, pgs. 2-3.)

Binocular microscope features three-dimensional field

Uses: Designed for use in any inspection operation, examination, counting, and checking.

Features: Depth of focus, long length of working space are useful in working under magnification.

Description: Featuring a wide, three-dimensional field, the Edscope Stereo-Microscope incorporates a fixed 3-power objective, with 3 pairs of matched eye-pieces to give powers of 15, 30, and 45X. In addition to rack and pinion focusing, unit offers interpupillary adjustment and has focusing eye-piece for exe compensation. The instrument is removable from base for mounting on equipment, bench, or another type of stand.

(Microscope is distributed by Edmund Scientific Corp., Dept. CP, 145 E. Gloucester Pike, Barrington, N. J. . . . or for more information check CP 8508 on handy form, pages 2 and 3.)

ELECTRICAL CONDUIT
that's armored
AGAINST CORROSION

Where corrosive moisture is making even your best raceway installation go to pieces too soon you can now specify Republic ELECTRUNITE "Dekoron-Coated*" E.M.T. to replace your present unarmored conduit. You'll be saved the expense and inconvenience of periodic replacement of conduits . . . circuits will be more completely protected from corrosive moisture and mechanical injury.

The tough, corrosion-proof polyethylene hide that covers Republic ELECTRUNITE "Dekoron-Coated" E.M.T. is impervious to practically every type of corrosive fumes and chemicals. This plastic armor is readily stripped for easy attachment of moisture-tight connectors and couplings which makes it adaptable to your present fittings. The joints are then sealed against corrosion with polyethylene electrical tape. It makes true end-to-end protection for raceways in chemical and food-processing plants and refineries.

Write for Bulletin DEK describing Republic ELECTRUNITE "Dekoron-Coated" E.M.T. or check your electrical supplier.

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STEEL AND TUBES DIVISION
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Republic ELECTRUNITE "Dekoron-Coated" E.M.T.
REPUBLIC STEEL
LIGHTWEIGHT THREADLESS RIGID STEEL RACEWAY

When inquiring check CP 8509 on handy form, pgs. 2-3

Clear, sharp graduations cut error chances from flask . . .

solution levels stand out clearly, are quickly read

Volumetric flasks, from 10 to 2000 ml, are reported to permit faster, simpler measurement of specified volumes with a minimum of error. Main feature of flasks is a Schellbach-type background, superimposed on a graduation mark filled in with a clearly visible yellow pigment. Consisting of a vertical blue stripe running through a white area, the fused-on background allows the level of the solution to stand out clearly. Flasks are available stoppered or unstoppered.

(Development of E. Machlett & Son, Dept. CP, 220 E. 23rd St., New York 10, N. Y. . . . or for more information check CP 8510 on handy form, pages 2 and 3.)

Micro centrifuge does work of larger unit

Uses: For microchemical and clinical testing.

Features: Operates up to 23,000 rpm, and powerstat is available for controlling speed.

Description: Although measuring only 7½" high and 6½" in diam, micro centrifuge is claimed to accomplish work ordinarily requiring a larger centrifuge. Unit holds 8 tubes with capacities up to 1 ml, and tubes are placed opposite each other with no precision balancing required. Unit operates from any 110 v AC outlet.

(Unit is a product of Microchemical Specialties Co., Dept. CP, 1834 University Ave., Berkeley 3, Calif. . . . or for more information check CP 8511 on handy form, pages 2 and 3.)

Permits determination of oxygen absorbed by rubber . . .

designed for use in studies of oxidation and aging

Uses: Determines amount of oxygen absorbed by rubber, plastics, fiber, or other materials which are subject to deterioration on exposure to air or oxygen. Unit may be used both for routine aging tests, and for fundamental studies

when it's accuracy and control that counts

it's a

LINDBERG

G-10 LABORATORY FURNACE

Fun is fun—and a joke is a joke . . . but when a busy laboratory technician has to fuss for an hour over the setting and control of a furnace —*that's no joke.*

Use the Lindberg G-10 Laboratory Furnace—just set it and forget it! The G-10 is electronically controlled to operate at a preset temperature within a plus or minus 5°F. limit. The electronic indicating and controlling pyrometer, an integral part of the G-10, saves many man hours of supervision in the modern laboratory. Its 3000°F. top heat is available for intermittent operation—and you can run it for a week at 2500°F. It's compact—2'x3'x5'—completely self contained . . . all controls and equipment are in the furnace housing, just hook it up. It's a current saver—the electronic controller applies current only to adjust or maintain heat. It's tough—10 oversize Globars and an 8 KW transformer produce optimum low watt density and long element life.

It's a natural for *your laboratory.* Ask your laboratory equipment dealer for full details, or write Lindberg Engineering Company, 2480 West Hubbard Street, Chicago 12, Illinois. *Ask for Bulletin No. 980.*

LINDBERG—*for a complete line of the finest*
LABORATORY HEATING APPARATUS

When inquiring check CP 8512 on handy form, pgs. 2-3

on the mechanism of oxidation reactions.

Features: Design of apparatus prevents contamination of various samples by migration of volatile materials from sample to sample.

Description: The GFB-JRS Oxidation Unit, Model A, consists of 14 individual sample tubes, each with its own gas buret and leveling bulb. The tubes are arranged uniformly in a circular aluminum block, so that all are equidistant from a thermostatically controlled heating unit in the center of the block. Uniform, stable temperatures are provided by means of a sensitive thermoregulator. The volume of gas absorbed or generated in reaction tubes is accurately measured in water-jacketed buret.

Fourteen tubes may be loaded with identical samples or with different materials if desired. Controls permit operation at temperatures to 200°C with an accuracy of plus or minus 0.1°C. Burets are water-jacketed for greater accuracy, and system is gas-tight with easy correction to STP.

(GFB-JRS Oxidation Unit is a product of G. F. Bush Associates, Dept. CP, Box 175, Princeton, N. J. . . . or for more information check CP 8513 on handy form, pages 2 and 3.)

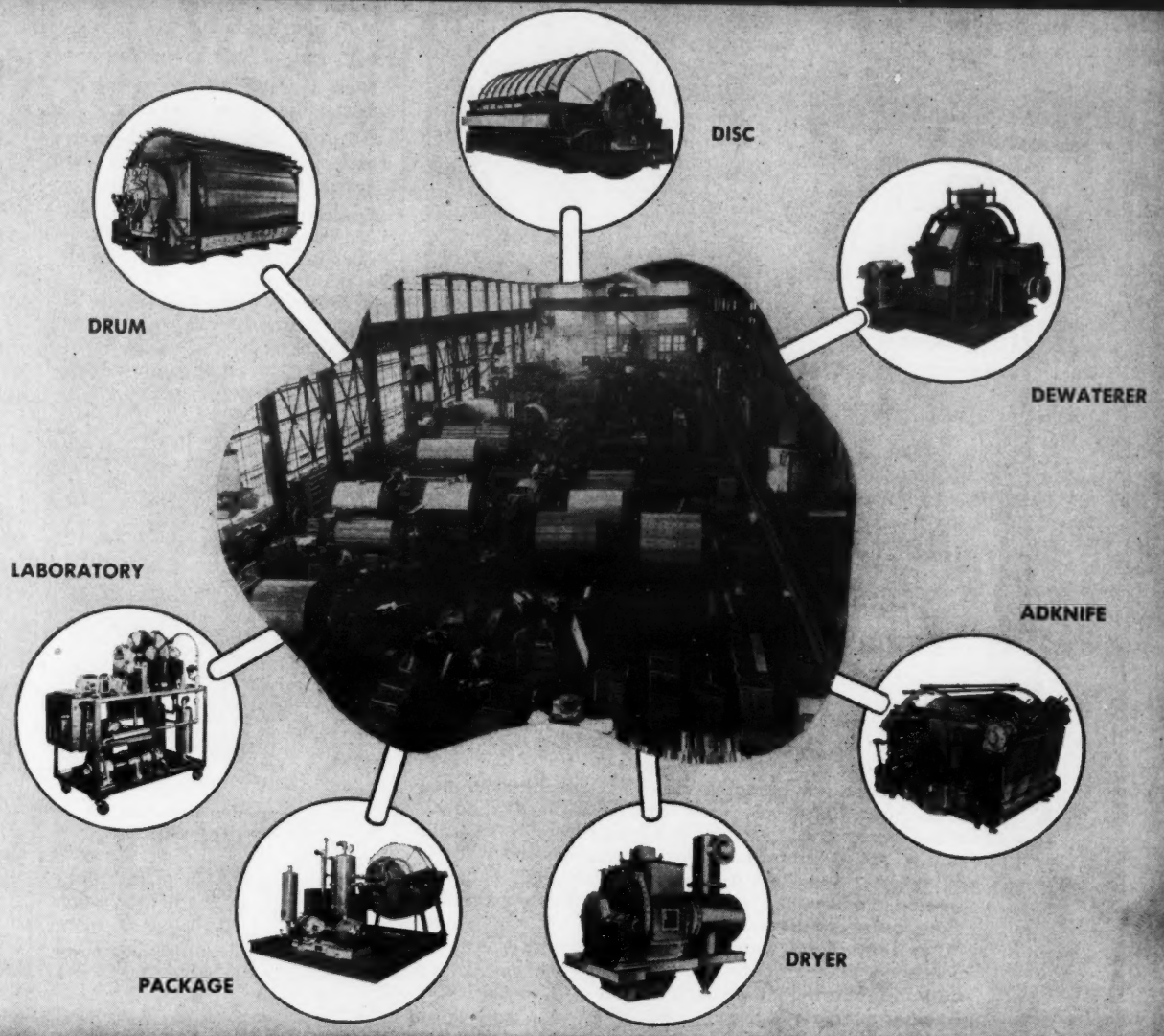
Presents information on radioelements

Comprehensive, informative catalog lists classes of isotopes and services available, procurement procedures and general conditions, details of isotopes, naturally radioactive material and special preparations, health regulations and precautions and accessory equipment. Complete specifications and physical properties are given for each radioactive product.

Cat B is issued by Commercial Products Div., Atomic Energy of Canada, Ltd., Dept. CP, P O Box 93, Ottawa, Canada. When inquiring specify CP 8514 on handy form, pages 2 and 3.

For more information on product at right, specify CP 8515 . . . see information request blank between pages 2 - 3.

EIMCO VACUUM FILTERS



FOR THE PROCESS INDUSTRIES

Production of all types of continuous vacuum and pressure filters from our new filter plant has reached an all time high. In addition to production these facilities have given us an opportunity to try out new techniques, work out better ways of producing the special equipment your plant will require. We can now recommend new materials we've been experimenting with in our laboratories.

Write for information on the type of filtration equipment you'll be needing — your problem will be kept in strictest confidence. Eimco makes all types of vacuum filters and we'll tell you about the one we think will do the job best. It'll be the best filter you can buy at any price.

EIMCO A438

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after 5 years' service this REPUBLIC WATER HOSE comes home in a bag!!

It's a fact! Five years ago a 50-ft. length of Republic Rubber Water Hose became part of a roof-top cooling system at the Kircher Asbestos & Rubber Company, Phoenix, Arizona.

The hose lay immobile across a flat, black-topped roof, channeling waste water from the cooler to a downspout drain. It was exposed to all the elements, summer and winter. Temperatures varied from a shivery 20° to a blistering hot 150° and yet, after five full years of service, the Republic Hose **showed absolutely no visible signs of deterioration!**

So remarkable was its condition that company officials cut off a sample section of the hose, put it in a bag and returned it to us with a letter of commendation. Another example of Republic superiority . . . more proof that Republic Rubber Products are **quality-built** for every type of industrial service, and, whether it's Hose, Belting or Rubber Specialities, it pays to specify the best —**Republic Rubber Products!** Write today for full facts.

Since 1901, Republic Rubber has been the outstanding source for all types of Industrial Rubber Products. Write us today for the name of your local Republic Rubber Distributor, who can save you time and money through expert installation, application and maintenance service.

REPUBLIC RUBBER DIVISION

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS

When inquiring check CP 8516 on handy form, pgs. 2-3

LABORATORY

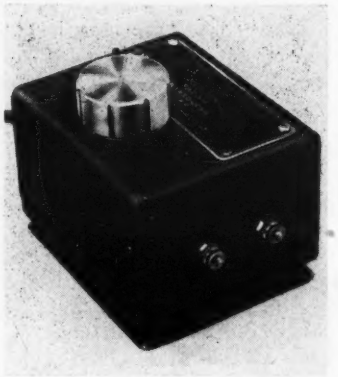
Transformer stands high overloads . . .

variable unit useful for labs

Uses: Valuable for general experimental use in the laboratory.

Features: Will stand high overloads. Sufficiently rugged for general use.

Description: Weighing 3 lb, Model 226 variable transformer has dimensions of 3½ x 4 x 3½". With a primary of 117 v AC, 50 w, secondary is from 7 to 13 v AC continuously variable and 4 amp continuous duty. Unit is supplied with a 6-ft AC cord and is finished in gray winkle.



Small, variable transformer for portable use

(Unit is a product of Pacific Transducer Corp., Dept. CP, 11921 W. Pico Blvd., Los Angeles 64, Calif. . . . or for more information check CP 8517 on handy form, pgs. 2-3.)

Lists equipment for inspection

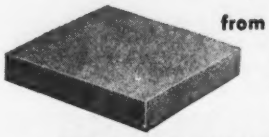
Eight-page illustrated bulletin describes more than 50 different items, all selected to help speed production and maintain standards in quality control.

Developements in scientific inspection which are listed include stereomicroscopes, illuminating magnifiers, micro-lights, complete variety of magnifiers, pocket microscopes, comparators, and miniature lamps.

"Inspection Bulletin" is issued by Arthur S. La Pine & Co., Dept. CP, 6001 S. Knox Ave., Chicago 29, Ill. When inquiring specify CP 8518 on handy form, pages 2 and 3.

Armstrong's

VIBRACORK CUSHIONS VIBRATION



from Hydraulic Presses, Pumps, Compressors, and many other types of Machinery and Equipment

. . . ACTUALLY FLOATS THE LOAD ON MILLIONS OF AIR CELLS!

Vibracork is a resilient machinery isolation cork plate made of pure cork granules, compressed and baked under pressure.

Convenient to stock — Standard sheets, 12" x 36"; Standard density 2" and 3" thick; Heavy density, 1", 2" and 3" thick.

Easy to use — Can be cut to size on the job with an ordinary hand saw.

Loading range — Standard density, 1500# to 4000# per. sq. ft.; Heavy density, 5700# to 8500# per. sq. ft.

Availability — Immediate delivery. Korfund is sole distributor for the United States.

For installation data and further information, ask for Bulletin VC-500.

THE KORFUND CO., INC.

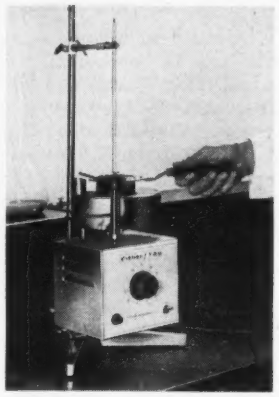
48-13E. Thirty Second Place • Long Island City 1, N. Y.

When inquiring check CP 8519 on handy form, pgs. 2-3

When inquiring check CP 8520 on handy form, pgs. 2-3

Redesigned testers streamline ASTM flash tests . . .

portable one-unit assemblies are easier to move



Portable one-unit flash point testers combine portability and convenience

Uses: Units are used for determining flash and fire points according to ASTM method D-92. Asphalts, lubricating oils, and illuminating oils may be analyzed by this method.

Features: Testers have been redesigned to make them portable one-unit assemblies.

Description: Three models—one gas model and two electric models — of the Fisher/TAG Cleveland open cup flash and fire point testers have been completely redesigned. Gas and electric heaters are now integral parts of the stand assemblies, with gas inlet on both type models mounted in rear at bottom of the stand. Therefore, only one short piece of rubber tubing connects gas inlet to gas tap. Electrical models use gas, since ASTM requirements specify a gas test flame.

Mounted in a convenient position on heater of gas-heated model, the test flame torch and its individual pilot are incorporated into a rigid assembly. Adjustment may be made for another test while the apparatus is still hot, since there is no extra connection at the heating gas burner to interfere.

On the gas-heated model a smaller grid has been substituted in the gas burner so that the flame will not backfire at the slow ASTM heating rate (to be adjusted to 9-11°F per minute by operator).

A resistance-type heater controlled with a variable auto transformer allows for precision adjustment of heating rate on the electric model.

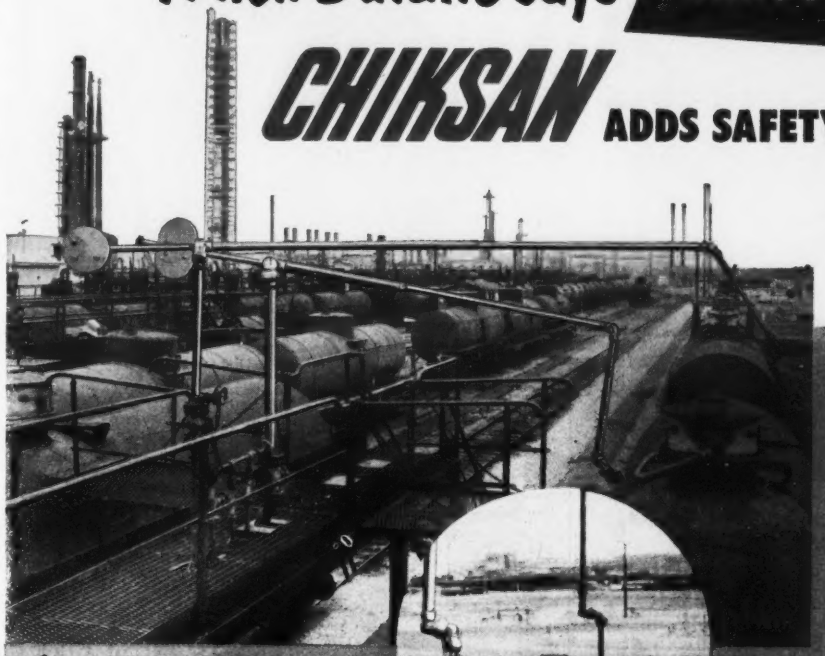
On all units the stand and control box are finished in a polychrome grey resin. Remaining parts are chrome plated. On both the gas and electric models the sample cup is a casting, not a forging, and is thus much less susceptible to thermal distortion. Redesigned handle of sample cup incorporates a non-slip expanding pin through wooden grip and then through the center of metal handle to prevent grip from turning independently of the handle.

An adjustable test flame torch, pivoted in a special clamp, is provided on both electric and gas models for swinging the test flame across the center of cup at the distance from the surface specified by ASTM.

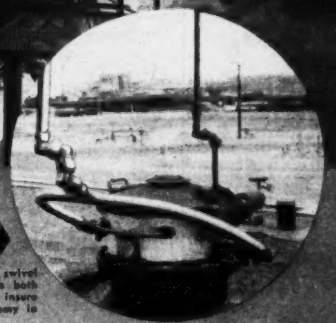
(Units are products of Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . . or for more information check CP 8521 on pgs. 2-3.)

When Butane says "HANDLE WITH CARE"

CHIKSAN ADDS SAFETY and SPEED TO LOADING OF TANK CAR AND TRUCK



With counterbalanced Chiksan loading racks, one man can quickly and easily make connections to tank cars.



CHIKSAN low pressure swivel joints employed here on both supply and return lines insure safety, speed and economy in loading tank cars.

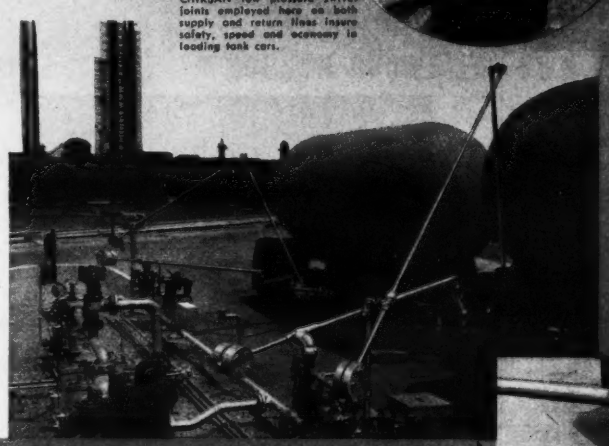
It takes speed, safety and kid-glove handling to keep up the massive flow of liquefied petroleum gas at Standard Oil Company of California's El Segundo plant.

Chiksan provides the necessary liquid-tight, gas-tight unions, the characteristic flexibility of motion to keep the touchy Butane flowing at a swift, even pace with safety to workers, plant and community — with profit to the company.

No less than eight Chiksan Ball-Bearing Swivel Joints are needed for each loading installation to keep the gas moving into tank and truck—to provide the essential carry-off of the highly explosive vapors. And with Chiksan on the job, metal of relative low porosity takes the place of more porous and less safe rubber.

Standard Oil Company of California's El Segundo installations are typical of industry's reliance on Chiksan Ball-Bearing Swivel Joints around the world to speed the flow of enterprise — to promote production and defense—to increase safety—to protect profits.

Wherever liquid or gas must flow in industry — wherever hydraulic systems can add efficiency and economy—Chiksan Ball-Bearing Swivel Joints are on the job. If more flexibility—greater stamina—longer life and added economy are of interest to you, Chiksan's Research and Development Division can help you find a better, swifter way.



A typical near ground level truck loading rack using CHIKSAN joints on supply and return lines.

Close up of CHIKSAN low pressure joints on supply and return lines in truck loading of Butane.

The Flow of Enterprise Relies on CHIKSAN Ball-Bearing Swivel Joints

Representatives in Principal Cities Write for Catalog 53-C, Dept. CP-3

CHIKSAN COMPANY • BREA, CALIFORNIA • Chicago 28, Illinois • Newark 2, New Jersey

Weil Equipment Mfg. Corp. (Division), Houston 1, Texas • Chiksan Export Company (Subsidiary), Brea, California; Newark 2, N. J.

When inquiring check CP 8522 on handy form, pgs. 2-3

Which Package is Selling Your Product?

The bag at the right was closed by the handy FISCHBEIN *Portable* BAG CLOSER!

Completely portable, the FISCHBEIN BAG CLOSER weighs only 10½ pounds, operates from any electrical outlet. Over 5,000 users are now enjoying the advantages of this economical, efficient machine.

7 reasons why the

FISCHBEIN *Portable* BAG CLOSER

pays for itself in a short time!

1. Improves the appearance of filled bags to increase sales appeal of your product!
2. Keeps bags in good condition for further use.
3. Machine closed bags save space by stacking better.
4. Smaller bags can be used since there is no bunching at top of bag.
5. No chance of bag tops opening and contents spilling.
6. Sewing thread is cheaper per bag than other materials.
7. Reduces labor cost by speeding up closing operation!

Address inquiries to:

DAVE FISCHBEIN COMPANY
Industrial Sewing Machinery

DEPT. 9B, 38 GLENWOOD AVE. • MINNEAPOLIS 3, MINNESOTA

When inquiring check CP 8523 on handy form, pgs. 2-3

Fig 1—Polyethylene liner with circular disk forming bottom is easily inserted in drum. This type liner lessens danger of rupture

Waste and Weight Reduced with polyethylene drum liners

Used with steel or fiber drums, they lessen corrosive action on containers, facilitate cleaning, and make entire contents available to consumers

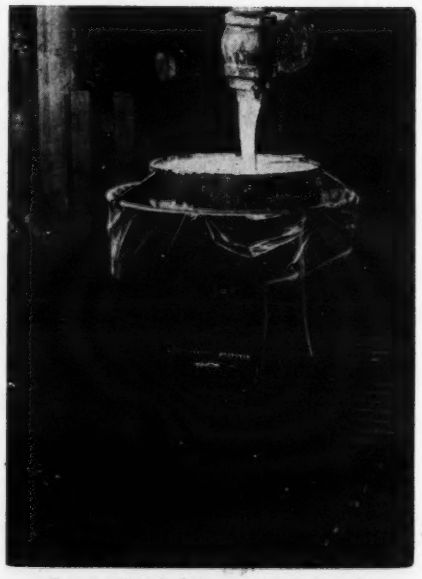


Fig 2—Liquid being poured through sieve in steel drum fitted with polyethylene liner. Tube hanging over side of drum is for removal of air pockets

POLYETHYLENE drum liners have proven a successful factor in reduction of two of any bulk shipper's big problems — waste and weight. Inner liners permit a decrease in weight of containers, considerably lowering tare weight of liquid, semi-liquid, and solid shipments. Since products do not adhere to sides of containers, entire contents are available to consumer. Liners also lessen corrosive action on drums and make cleaning easier.

Liners can be used with steel drums, fiber drums, or square boxes. Recently introduced liner designed for drums is easier to use because of a circular disk which forms the bottom of the liner. Use of this type, as shown in Fig 1, eliminates use of mandrels, which are necessary for insertion of flat liners. Mandrel is used with square boxes.

Liner with circular disk in bottom prevents creases which can result in leaks and rupture in flat type bags. However, in addition to use of mandrel, flat bags can also be satisfactorily inserted with an undersized disk or block. Although polyethylene has a high resistance to puncture and tear, it should not be forced with a sharp instrument. When pouring dry material, precaution should be taken to make certain that liner is resting on bottom of container.

An illustration of a steel drum being filled with liquid is shown in Fig 2. With liquids, it is a good idea to

place a rubber tube between liner and the length of the drum. In this way any air pockets that form are bled off through tube. Trapped air pockets only waste space and should be avoided. Rubber tube does job very well.

Care should be taken in closing drum and liner so that liner is not strained. When closing dry or paste materials, twist liner and tie it high enough to eliminate strain. Then untwist liner and adjust it down on contents. Twine can be used around top of liner. An example of a filled fiber drum, ready for cover, is shown in Fig 3.

Fig 3—Many chemical products may be easily shipped in lightweight fiber drums, such as this one, with use of polyethylene liners. Liner is shown adjusted down on contents preparatory to closing container

When closing drums containing liquids or semi-liquids, tie a loose knot high on liner. Force out excess air and tighten knot. A hexagonal single-thickness of film can be placed on top of contents. Cover is fitted over drum, allowing excess of liner turned down over sides of drum to remain in that position.

When removing material from containers, all that is necessary is to untie knot or slit it. When most of product has been removed, take out liner and squeeze remainder of material from it. It is reported that as much as 15% of contents can be salvaged through use of drum liners.

Since polyethylene liners are chemically inert, almost anything can be placed in them They are resistant to strong acids, alkalis, and alcohols. They are particularly suitable for corrosive materials and chemicals such as those mentioned and for many other "hard to handle" solid, liquid, and semi-liquid materials.

Liners with circular disks in bottom range in gage from 0.0015, often used with smaller drums and less corrosive products, to heavy 0.006 gage for highly corrosive materials. They are available for use with drums ranging in capacity up to 55 gallons.

(Product of Mehl Mfg. Co., Div. of Sidney-Thomas Corp., Dept. CP, 2057 Reading Road, Cincinnati 2, Ohio . . . or for more information check CP 8524 on handy form, pages 2 and 3.)

Hudson foresters choose a stand of prime timber for multiwall Kraft from Hudson's 435,000 acres. They practice selective harvesting, always leaving parent trees to help with the new crop, by natural reseeding.

Careful selection of trees for mechanized cutting gives uniform quality and dependable supplies of raw materials for pulp making.

Every year about 1½ million southern pine seedlings are planted on Hudson tree farms.

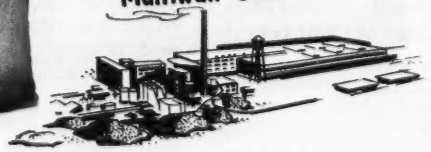
Here is why HUDSON can guarantee Multiwall Sacks against breaking on the packer

REASON NUMBER 1 HUDSON GROWS ITS OWN TREES

Tree farming is big business with Hudson. Every month the company's Palatka, Florida, mill converts 620 freight carloads, 2,515 truck loads, and 10 barge loads of company-grown pine into long-fiber Kraft.

By growing its own trees, Hudson can exert iron-clad control of Multiwall Sack quality and delivery schedules. This is one reason why Hudson can guarantee to replace *without cost* all Hudson Multiwall Sacks that fail on your packing or closing machines.

the World's most fully GUARANTEED Multiwall Sack



HUDSON MULTIWALL SACKS

Send for these 3 helpful folders:

"Avoid Breakage," "Dependable Source of Supply," and latest issue of "Sack Sense." Also full details on Hudson's unusual Replacement Guarantee. No obligation.

HUDSON PULP & PAPER CORP.,
Dept. 215, 505 Park Ave., New York 22, N.Y.

When inquiring check CP 8525 on handy form, pgs. 2-3

USE Bemis

Waterproof Laminated-Textile Bags

FOR YOUR HARD-TO-PACK PRODUCTS

GET 5-WAY PROTECTION

...they guard against:

- Change of moisture content
- Sifting
- Escape of undesirable odors
- Loss from snagging and tearing
- Rough handling in l. c. l., truck or export shipment

3- or 5-layer construction depending on your protection requirements. Special linings of treated papers and films available.

Bemis

408 Pine St., Box 92
St. Louis 2, Mo.

Maybe You Need These, Too

If you don't require the exceptional protection of Bemis Waterproof Bags, Bemis Multiwall, Flexiply (laminated crinkled multiwall), Cotton or Burlap Bags are your best bet.

Whatever Kind of Bag You Need, WE MAKE IT!

When inquiring check CP 8526 on handy form, pgs. 2-3

PACKAGING

Variety of weighing jobs can be handled by bench scales

Characteristics of compactness and portability in bench scales are exploited to the full by units which can handle a multitude of weighing requirements.

Parcel post dial chart is available to make the scale suitable for that use or for express and ordinary shipping. Single and double ratio counting attachments can be supplied for applications where scale is to be used for counting small parts.

Bench scale with tare and capacity beams

Where weight records are necessary, weight printer mechanism — which automatically prints load weight on tape or ticket — can be installed.

Indicator clips can be mounted on the dial head to simplify compounding and assure top accuracy. Such clips, used in conjunction with a blank dial chart, can be utilized to safeguard secret formulas. For checking the flow of materials from a tank placed on the scale platform, unit can be provided with circular and strip chart records.

Photoelectric cells and mercury switch cut-offs can be furnished for compounding and batching. Units are available with or without tare and capacity beams. Dial capaci-

For FILTERING & FILLING

small plant or batch lots of

PHARMACEUTICALS,
COSMETICS,
CHEMICALS,
SOAPS, Etc.

Two Ertel units that make small production efficient. They have all the desirable features of Ertel high production equipment: EFS-B FILTER has single hand wheel for simple trouble-free operation, bronze or stainless circulatory system, accomodates accepted Ertel Asbestos Filter Sheets. PORTABLE FILLER has automatic overflow system, non-drip spouts, bottle size flexibility up to gallons. And, both units can be easily moved from place to place. Write for detailed information on this important equipment... it belongs in your plant.

ERTEL ENGINEERING
CORPORATION

KINGSTON 3, NEW YORK
Branch Office & Showroom Located in New York City

COMPLETE LINE OF
Liquid Handling Equipment

ERTEL

When inquiring check CP 8527 on handy form, pgs. 2-3

BRIEFS...

from contemporary publications

READ THEM . . . IN THIS ISSUE

You get a "quick look" at the most valuable articles being published in this field, and kindred fields . . . by reading the "BRIEFS" section of CHEMICAL PROCESSING every month.

Our Editors read more than 50 contemporary publications every month . . . select those articles they believe you will want to know about . . . and, in terse style, they tell you about them. Name of publication and issue are given so you can read those you want to know more about.

It's a monthly service . . . to save you time . . . yet keep you informed. See "BRIEFS" in this issue, page 160.

ties of the five models range from 125 to 1000 pounds. For maximum portability and convenience, units can be supplied with an adjustable wheel stand which can be raised from 25⅜ to 31⅜ inches in increments of 1 inch.

Outboard bearing construction prevents platform tilt, eliminating excessive wear on pivots and bearings. Unit has full-floating platform system. Pivots and bearings, which are plated against rust, are replaceable and interchangeable in the field.

Scale contains steel levers, not the conventional cast iron components. Magneforce dial head mechanism is said to assure precise weighing and accurate weight reading at any point on the chart.

(Heavy Duty Bench Scale is product of Detecto Scales, Inc., Department CP, Park Avenue and Sanford Street, Brooklyn, New York . . . or for more information about this product simply check CP 8528 on handy form, pages 2 and 3.)

Restores moisture driven from wrappers during printing . . .

small conditioning unit can be attached easily to printing press

A small conditioner unit has been developed which restores the moisture removed in printing of cellophane and other wrapping materials to its normal value. Conditioner can be attached to any type printing press, horizontal or vertical. Unit is also reported to improve general appearance of wrappers and increase protective qualities of moisture-proof film.

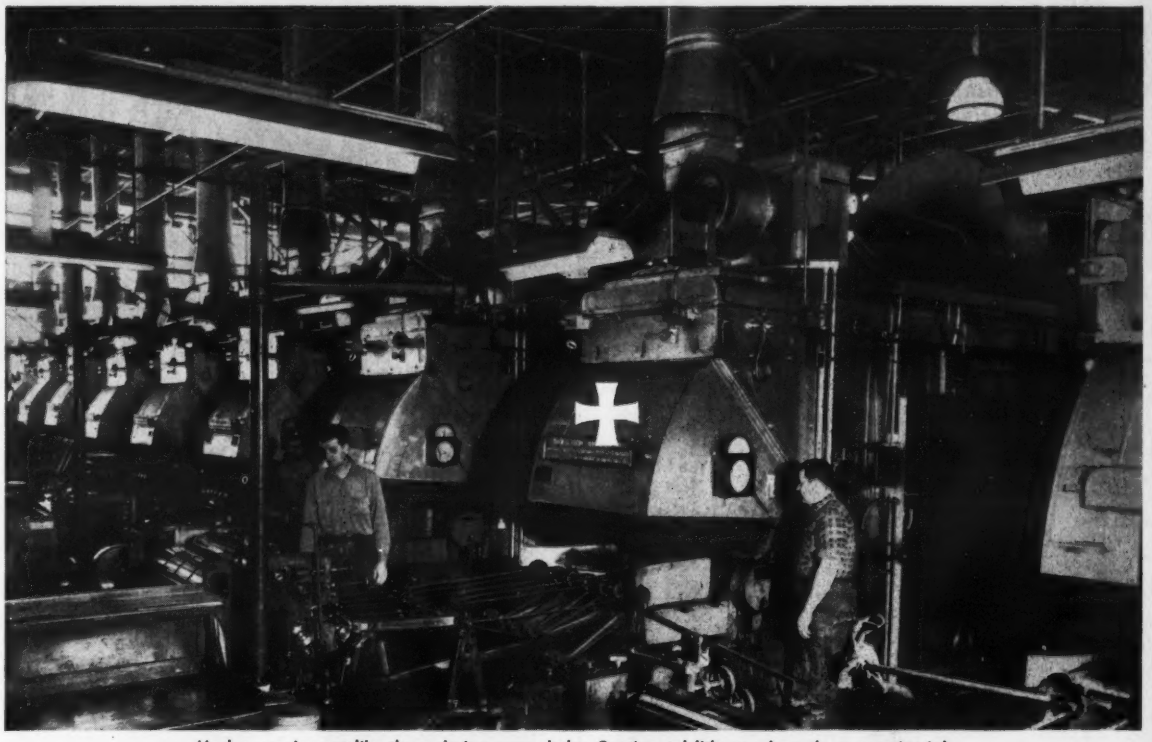
Numerous attempts have been made in the past to replace moisture driven from film during printing operation. Such methods as open steam pipes, high humidity chambers and other crude procedures proved inadequate.

Increasing use of cellophane as an overwrap made need for a satisfactory conditioner more acute. As a result this small unit, approximately 40 by 13 inches, (width depends on the size of the press) was developed.

Outstanding features of unit, in addition to small size, include simplicity of operation, easy installation, and uniformity in moisture regained, regardless of speed and ink coverage.

Conditioner is also said to remove wrinkles or distortions which might be placed in material during processing operation. It reduces loss in width resulting from drying out and stretching during printing operation. Better printing quality is assured by removal of residual solvents from the inks as well as by giving improved anchorage between inks and film. Unit also improves the winding quality of finished rolls of film.

(Conditioner was developed by Sylvania Div., American Viscose Corp., Dept. CP, 1617 Fredericksburg, Va. Manufacturing rights have been assigned to Wales Engineering Co., Dept. CP, 223 S. Mint St., Charlotte, N. C., who are in position to construct and install units.)



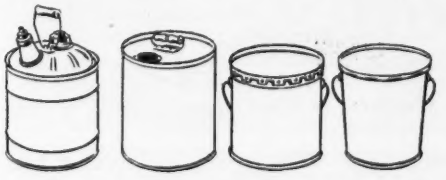
Modern equipment like these drying ovens helps Continental lithographers do a superior job

MARKS ONE OF THE REASONS WHY
CONTINENTAL LITHOGRAPHY IS TOPS!

It's a fact that Continental is one of the few steel container manufacturers that also make tin cans. And for many years we've been "decorating" a goodly percentage of both.

What does this mean to you? Simply that we have an experience in lithographing-on-metal that's hard to equal. Our volume production of lithographed containers enables us to employ top notch craftsmen. And we provide them with the most modern photographic apparatus, presses and other equipment.

The next time you need steel containers for bulk products—and want them to be as handsome as they are sturdy—why not call on Continental. Let us show you how



our Tailor-Made Service can exactly fit your needs.

CONTINENTAL CAN COMPANY

Continental Can Building, 100 E. 42nd Street, New York 17, N. Y.

EASTERN DIVISION
100 E. 42nd St., New York 17

CENTRAL DIVISION
135 So. La Salle St., Chicago 3

PACIFIC DIVISION
Russ Building, San Francisco 4

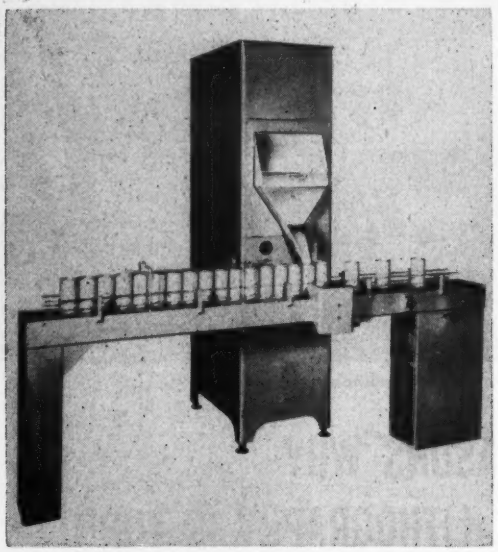
When inquiring check CP 8529 on handy form, pgs. 2-3

Fills the package and tells net weight . . .

quick changeover covers a broad product and weight range

Uses: Package filling and weighing machine operates automatically for all types of flat bottom containers and is semi-automatic for other types of containers including bags.

Features: Unit can be quickly adapted to cover a broad range of products and weights.



Net weighing machine with conveyor

Description: When complete filler-conveyor unit is operating, containers are fed to filling spout where they are stopped and held by control fingers. When filled, they are carried away by conveyor. Filling mechanism will automatically stop if container is not in correct filling position. Conveyor is electrically synchronized with weighing machine, and the containers automatically align themselves and move to filling spout in cadence with filling operation.

Operating on 110/120 v, AC, the machine has height, width, and depth dimensions of 85 x 22 x 36". Standard conveyor is supplied 8' long, 33" high, and is powered by 110 v, 60 c motor.

(Product of Frazier & Son, Dept. CP, Belleville, N. J. . . . or for more information check CP 8530 on handy form, pages 2 and 3.)

Seamless construction featured by cylinders

Most commonly used for storage and transportation of fixed and liquefied gases, high pressure cylinders are seamless, with integral bottoms (not spun) and are made by the billet process.

Fabrication process, specifications, dimensions, and marking details for cylinders are outlined in 16-

NEW! for IMPROVED STACKING, PALLETIZING and MATERIAL HANDLING

UNION'S NON-S

ECONOMICAL
The most economical bag with a built-in NON-SKID.

LESS REPROCESSING
Less breakage and spilling means less rehandling of product.

MORE PROTECTION
Curtails breakage due to bags falling from fork trucks and stacks.

PLEASES YOUR CUSTOMERS
Reduces likelihood of transit damage due to load shifts; cuts down complaints.

LABOR SAVINGS
Fewer man-hours needed to clean up contents of broken units; easier handling.

UNIFORM STACKING
No variation. Provides completely dependable stacking qualities.

MOVE FREELY
Manufactured to flow on chutes and conveyors.

WON'T ADHERE
Bags will not stick to each other in bundles.

ADAPTABLE
Special coating is controllable. Like all Multiwalls, it is custom-engineered for each use.

SHIP BETTER
Resist rough handling. Less tendency to slide and chafe in transit.

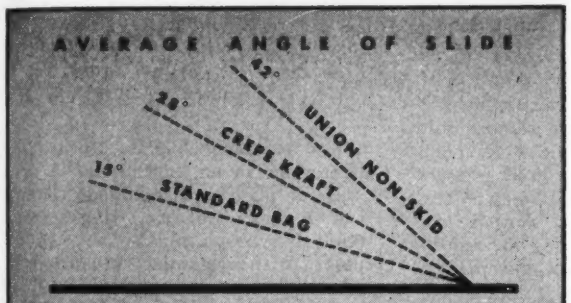
TRANSPARENT
Coating shows inks and stock to full advantage.

EASY TO SEW
Tops of bags may be kept free of coating.

NON-SKID
MULTIWALL BAG

N-SKID MULTIWALL BAGS

Sprayed-on coating reduces skidding effectively



Union's NON-SKID holds firm at three times the angle. In standard laboratory tests to determine non-skid characteristics, scales connected to tilt tables measure the degree of angle required to make bags slide off. Union's new NON-SKID bag has a minimum slide angle of 42°, far superior to any other bag.

Union's brand-new
NON-SKID Multiwall Bag
guarantees better performance at
every stage of your
packaging, storage and shipping operations
where skid control is essential.

Union's *NON-SKID* is a
performance-proved Multiwall
with the addition of
an exclusively developed resin-like emulsion.
Almost invisible to the eye,
this new spray makes this the first
all-way NON-SKID Multiwall.

This new bag delivers a far greater *non-skid* rating in every direction . . .
even greater than bags made of creped kraft.

Size — Stock — Delivery

Available in Union Multiwalls of all sizes with either a kraft or bleached outer ply. Initial capacity may be limited. Orders will receive priority in order of receipt. Investigate now.

BEST APPLICATIONS

Union's *NON-SKID* is particularly recommended for feed, chemicals, flour, synthetic rubber, starch, fertilizer, insulating materials, and other products in whose packaging material handling is an important consideration.

DRIVER COULDN'T MAKE *NON-SKID* BAGS SLIP OFF!

In one plant test, a gasoline-powered truck was loaded with these bags. The driver was instructed to make them slip off.

He started forward at full speed, then applied brakes full force.

Although momentarily the truck itself threatened to tip over, the stack of NON-SKID Multiwalls resting on the forks merely leaned slightly, then settled back to their original position.

SEE FOR YOURSELF

UNION BAG & PAPER CORPORATION
Woolworth Bldg., N.Y.C. 7

We would like more information on the new Union NON-SKID Multiwall Bag.

Name_____ Title_____

Company_____

Street_____

City_____ Zone____ State_____

CP353

UNION BAG
& PAPER CORPORATION
Woolworth Building, New York 7, N. Y.

When inquiring check CP 8531 on handy form, pgs. 2-3

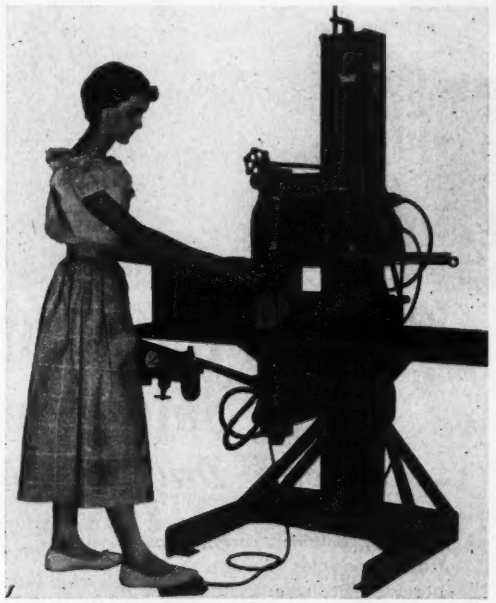
page bulletin. "Seamless High Pressure Gas Cylinders" is issued by Taylor-Wharton Iron and Steel Co., Dept. CP, Cincinnati 12, Ohio. When inquiring specify CP 8532 on form, pgs. 2-3.

350 cartons per hour are stapled — top and bottom

Uses: For simultaneously closing tops and bottoms of center slotted cartons and partial or full overlap cartons (either corrugated or fiber).

Features: Patented, retractable anvil permits closure to be made from outside, after cartons are filled with products or other materials. Special setting affords concealed stapling: staples penetrate approximately two-thirds of the way through carton wall and are clinched.

Description: Air-operated, the Staple King is semi-automatic and stapling heads function when operator touches foot pedal. A carton guide assists in properly positioning cartons for stapling, and it may be adjusted to accommodate different production runs containing several cartons of different sizes. Roller table guide will adapt itself to standard conveyor systems.



Operated by foot pedal, stapling machine has guide to assist in positioning cartons

Machine accommodates cartons which vary in height up to 5½", and brief adjustment sets machine when variance is greater than 5½". In addition to standard air filters, lubricators and regulators, the unit is equipped with warning lights that signal low supply of staples.

(Staple King is manufactured by International Staple & Machine Co., Dept. CP, 801 E. Herrin St., Herrin, Ill. . . . or for more information check CP 8533 on handy form, pages 2 and 3.)

Gaylord Boxes Give You Extra Sales Messages

....They're Traveling Billboards

Shipping containers carrying your trademark, sales message or slogan provide extra sales contacts. And they provide unusual opportunity for seasonal merchandising or special promotion deals.

Because good first impressions are good business it pays to ship your products in distinctive Gaylord Boxes.

For helpful information on "advertising on the move" get in touch with your nearest Gaylord Sales and Service office.

It's the unseen quality that gives you the extra margin of safety in

Gaylord Boxes

CORRUGATED & SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT BAGS & SACKS • KRAFT PAPER & SPECIALTIES

GAYLORD CONTAINER CORPORATION

General Offices: ST. LOUIS

New York • Chicago • San Francisco • Atlanta • New Orleans • Jersey City • Seattle • Indianapolis • Houston • Los Angeles Oakland • Minneapolis • Detroit • Columbus • Fort Worth • Tampa • Dallas • Cincinnati • Des Moines • Oklahoma City • Greenville Portland • St. Louis • San Antonio • Memphis • Kansas City • Bogalusa • Milwaukee • Chattanooga • Weslaco • New Haven • Appleton Hickory • Amarillo • Greensboro • Sumter • Jackson • Miami • Omaha • Mobile • Philadelphia • Little Rock • Charlotte • Cleveland

Mercury controls govern apparatus to safely seal the seams of polyethylene liners . . .

reportedly overcomes four major hazards in sealing these liners for drums, cartons, and bags

Manufacturer's electronic research program has led to development of a process for safely sealing the seams in polyethylene liners for drums, cartons, and bags undergoing rugged service. Resulting method is said to accelerate production and to overcome four major hazards heretofore encountered: 1) thinning or weakening of material along seamline, 2) a too-deep seal causing an extrusion along edge, 3) excess heat causing a fragile seal that won't support weight of contents, and 4) defective fusing resulting in "leaky" seals.

Equipment used in the Twin-Sure process involves a series of mercury controls which automatically balance the relationship between the exact temp required for a particular film and the exact pressure required for a safe seal. A buffer take-up system equalizes pressures on both sides of film, thereby imparting a strong seal and eliminating the risk of extrusion, thinning, or weakening the material.

As added safeguard for liners for heavy duty use, manufacturer has devised a Twin-Sure seal, which is actually a double-seal in two parallel strips, separated by a center-strip of unsealed polyethylene in its original strength. The seal is processed in one operation with special platens that automatically test and insure positive bonding.

(Process was originated by Protective Lining Corp., Dept. CP, 149 Waverly Place, New York, N. Y. . . . or for more information about this product, reader may simply check CP 8534 on handy Reader Service slip between pages 2 and 3.)

Aids bonding labels to polyethylene bottles

Ordinary paper labels may be applied to polyethylene squeeze bottles and containers by utilizing Poly-Grip adhesive as bonding agent. Easily adaptable to conventional labeling machines, adhesive is intended to replace stenciling or silk-screen processes currently used to label polyethylene containers.

(Poly-Grip is a product of Adhesive Products Corp., Dept. CP, 1660 Boone Ave., New York 60, N. Y. . . . or for more information check CP 8535 on handy form, pages 2 and 3.)

Accuracy and speed furnished by weighing machine . . .

semi-automatic unit with high sensitivity reduces losses due to overweight

Semi-automatic weighing machine is said to have increased speed without sacrificing accuracy. Accuracy is within 1/32 oz on 4 oz or less, within 1/16 oz on larger weights, depending on materials. For

Would you like to receive CHEMICAL PROCESSING personally?

It will be sent to you without charge or obligation . . .

. . . if you qualify

. . . if you request it

If you are responsible for processing operations in an administrative capacity as plant superintendent, chemical engineer, chemist, engineer or equivalent responsibility . . . in a plant of substantial operations* where chemical processing is an important factor . . . CHEMICAL PROCESSING will be sent to you without charge or obligation if you request it. Use form below. In requesting, be sure to answer all questions. If your firm is not rated or listed in standard references, indicate size of the company by capacity, annual sales or number of employees. Unless all information is given, magazine will not be sent.

*"Substantial operations" does not necessarily mean an extremely large plant. But requests for the magazine exceed supply so we must set standards to insure publication being sent where it can be used to best advantage.

CHEMICAL PROCESSING
111 EAST DELAWARE PLACE
CHICAGO 11, ILLINOIS

Please send me CHEMICAL PROCESSING without charge or obligation

Name

Title

Company

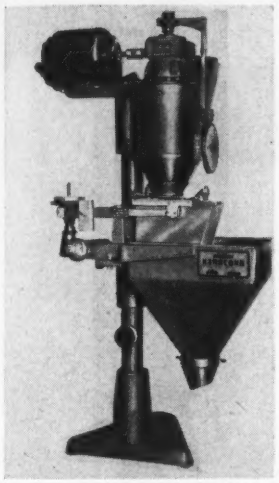
Rating of Company

Street

City Zone

State

Main Products



Semi-automatic weighing machine handles a wide range of package sizes

some products, 95% of the charges have been found to be the exact weight. Speed varies from 18 to 30 packages per minute, depending on material and size of package. Speed can be reduced to any lower rate desired. Dial control on feeder allows quick adjustment of the speed.

Scale has jeweled agate bearings with fine steel hardened and hollow ground knife edges. High degree of sensitivity is provided by the scale unit. Accuracy and sensitivity of this weighing machine are reported to reduce losses due to overweight.

Uniform flow is maintained by feeder, even with many materials classed as not free flowing. Package sizes from 2 oz up to 1½ lb can be handled, depending on product. Unit can package a great variety of materials. According to manufacturer, machine has been simplified so that no complicated mechanical or electrical devices are needed. This construction gives unit a long life with a minimum of repair. It can be installed and put into operation in minutes after removing from container.

In addition to being easy to install, weighing machine does not require skilled help to operate. Material to be packaged is simply placed in supply hopper (size of which can be varied), switch-snapped on, and valve gate manually opened. Material then flows uniformly into the weighing bucket. When weight desired is in bucket, flow is automatically cut-off, material dumped, and weighing started on a new charge. Operator need only place containers into position at chosen speed.

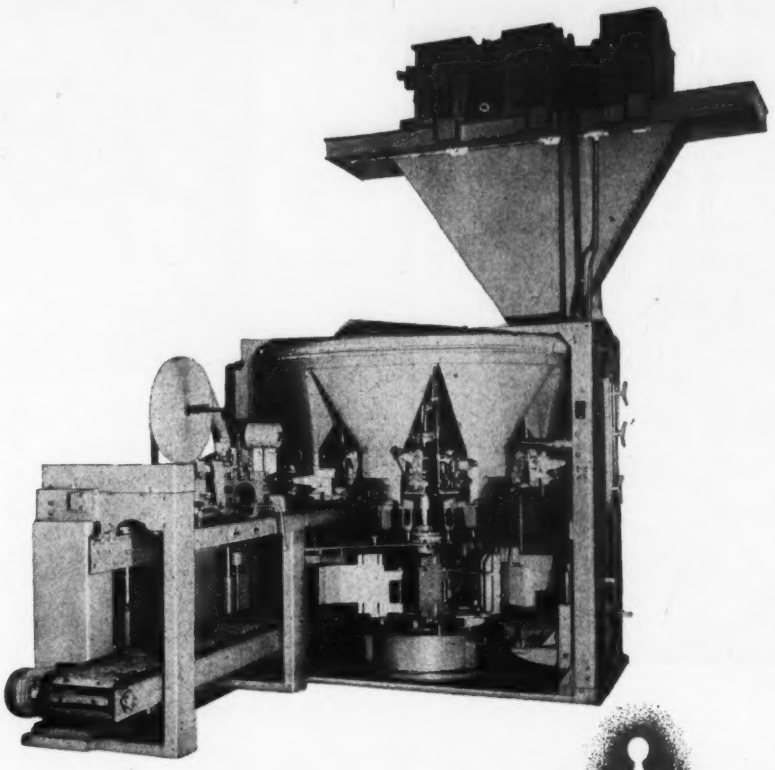
Unit is 48″ high and has a base measuring 15 x 15″. It weighs approximately 175 lb. Standard motor furnished is ¼ hp, 110 v, 60 cycle, AC.

("The Clipper," semi-automatic weigher is product of Hannconn Machine Co., Inc., Dept. CP, 180 Lafayette St., New York 13, N. Y. . . . or for more information check CP 8536 on form, pgs. 2-3.)

No need to search high and wide . . .

for more information on something you read in these editorial articles. A letter to the company listed at the end of the article . . . or a mark on the Reader Service slip . . . will bring you what you want. This idea originated with Putman Publishing Co. many years ago . . . to help busy men like you!

THE EDITORS



Bagging 350 tons a day...with ONE operator!

Bagging large tonnage of free and semi-free flowing materials in Multiwall Paper Bags becomes a simple one-man operation with the Model "A" BAGPAKER.

The Model "A" will package up to 7000 one-hundred-pound bags per 8 hour day. It requires only one man to hang the empty bags on the filling spouts. Accurate weighing, filling, settling and sewing are all automatic.

The Model "A" BAGPAKER is designed and manufactured by Multiwall Bag experts for reliable day in and day out service. It will pay for itself in 1 to 3 years. Over 30 of these machines are now being used in industry. Complete details may be obtained by writing to BAGPAK DIVISION, International Paper Company, 220 East 42nd Street, New York 17, Dept. P-10.

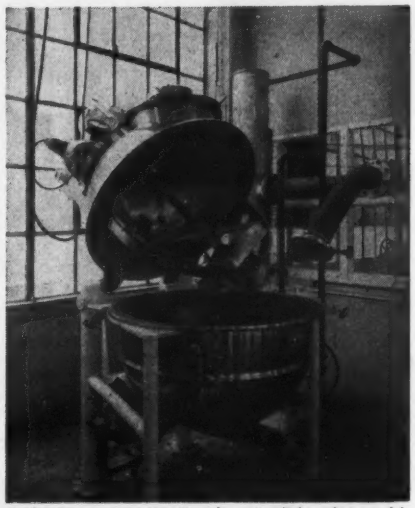
International Paper COMPANY

BAGPAK DIVISION

BRANCH OFFICES: Atlanta • Baltimore • Boston • Bryan, Kansas • Boston • Chicago • Cleveland • Denver • Detroit • Kansas City, Kansas • Los Angeles • New Orleans • Philadelphia • Pittsburgh • St. Louis • San Francisco • IN CANADA: The Continental Paper Products, Ltd., Montreal, Ottawa, Toronto

When inquiring check CP 8537 on handy form, pgs. 2-3

GREATER UNIT CAPACITY with BUFLOVAK-DOPP PROCESSING KETTLES



A hinged cover, supporting the drive and agitator, gives complete accessibility to this BUFLOVAK Stainless Steel Processing Kettle.

* For the profitable and better processing of many Chemical, Food, Pharmaceutical and Grease Products.

* Available in many types, materials of construction, and sizes, to meet specific requirements.

* Designed to perform the important function of thorough mixing with the minimum power consumption, BUFLOVAK-DOPP Kettles process a better, more uniform product, at lower production cost.

* Heating surfaces can be kept continuously free from accumulated material by special scraping agitators.

* Safe, quiet, and dependable operation is insured by completely enclosed drive units equipped with roller bearings. Cut bevel gears operate in bath of oil.

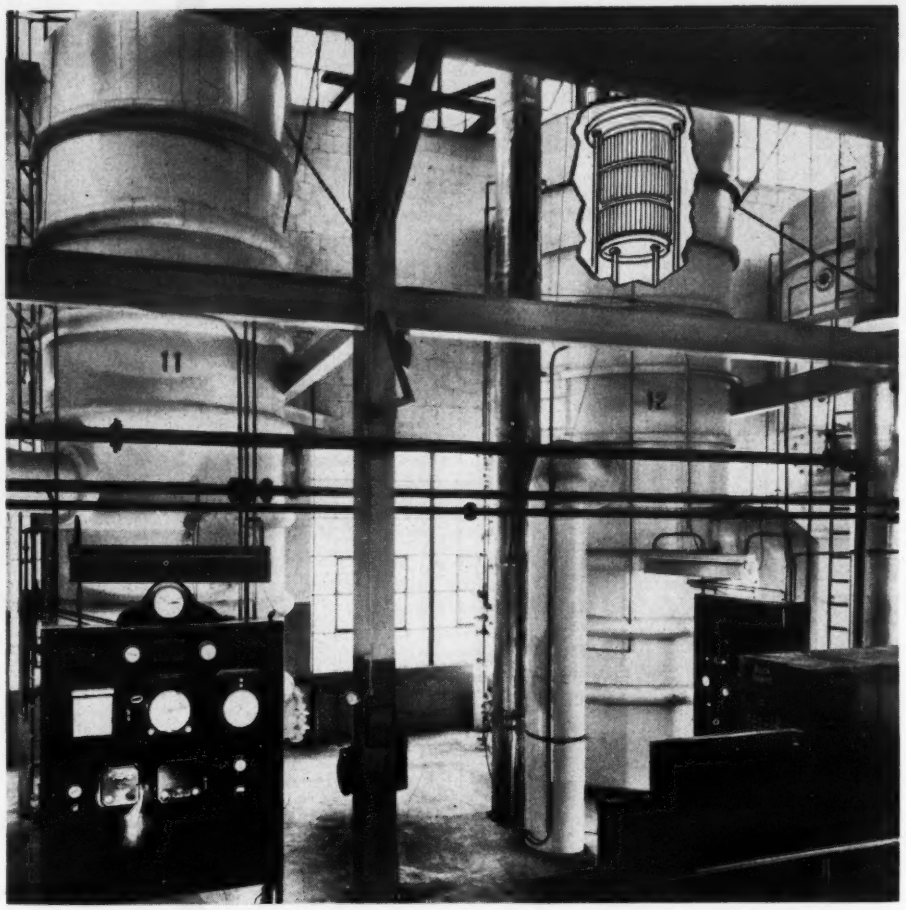
* Greater unit capacity... an increase in heat transfer... substantial savings in power... thorough mixing... and the complete discharge of processed batches, are benefits resulting from exclusive features in the design and construction of BUFLOVAK-DOPP Kettles.

* The BUFLOVAK Demonstration and Testing Laboratory is equipped to process a small quantity of your material to determine the type equipment and accessories that will give you the most efficient results.

* Write for complete information.

BUFLOVAK EQUIPMENT DIVISION
of Blaw-Knox Company
1579 Fillmore Ave. Buffalo 11, N.Y.

When inquiring check CP 8538 on handy form, pgs. 2-3



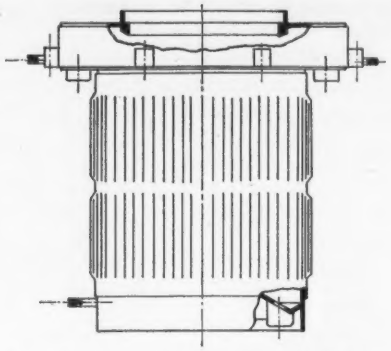
Evaporators in operation at electrolytic caustic soda plant. Sectional view of unit which effectively separates the entrainment is shown in the top of column at the right

Vapor 99.9% Pure Produced by Entrainment Separator

Unit being used in manufacturing 100 tons/day of NaOH, operates with minimum pressure drop, resists action of salt and hot caustic soda

From information supplied by Harold E. Jacoby, Process Equipment Div., General American Transportation Corp.

PROBLEM: In a large plant engaged in the manufacture of electrolytic caustic soda, problem was presented of preventing liquor loss in the vapor during evaporation. A solution of caustic and salt is evaporated to produce a 50% NaOH product and salt crystal for return to the electrolytic cell operation. Entrainment separator was needed that would produce a vapor so pure that condensate from it would be returnable to boilers.



View of entrainment separator with two annular races

In addition, unit would be required to operate with a minimum pressure drop so that very little temperature loss would result. In this way maximum evaporator capacity would be maintained. Equipment also had to be designed so that it could be flushed to avoid build-up of salt crystals. Separator needed to be corrosion-resistant to the action of the salt and hot caustic soda. It had to be constructed so it would require only a limited space and minimum utilization of critical metals.

Solution: A set of purifiers, as illustrated in accompanying photograph, was installed in triple effect Conkey evaporators. These Monel metal entrainment separators are located under vapor outlet nozzle of each nickel vapor body.

Vapor, along with the fine particles of liquor, enters the separator through the tangentially set tuyere blades forming the main shell of the separator. A vigorous whirling mass is created inside the unit. The entrainment, which is heavier than the vapor, is readily thrown to the outer circumference. Races are provided in which this liquid is collected and returned to the liquor system by means of eject-type drain pipes. Vapor freed from entrainment passes to evaporator outlet.

Each race-way has flushing arrangements so that any salt accumulation can be removed without interruption to the continuous operation. Unit is flexible enough to accommodate varying amounts of vapor flow.

Results: Condensate better than 99.9% pure is obtained in evaporator installation producing 100 tons/day of NaOH. Evaporator has been in operation for more than a year with normal continuous return of this pure condensate to the boiler system, and with no loss in product.

Equipment operates with minimum pressure drop, permitting maximum evaporator capacity. Flushing of the salt crystals does not interfere with the continuous operation. Corrosive action of the salt and hot caustic soda has been satisfactorily resisted by the evaporator installation.

(Conkey evaporators are products of General American Transportation Corp. Type AFD Purifiers are manufactured by Centrifix Corp., Dept. CP, 3608 Payne Ave., Cleveland 14, Ohio . . . or check CP 8539 on handy form, pages 2 and 3.)

Reineveld Centrifuge
CUT LABOR COSTS
USE LOWER GRADE RAW MATERIALS
CUT PRODUCTION BOTTLENECKS
BOOST THERMAL DRYER CAPACITY
CUT MAINTENANCE COSTS
ELIMINATE INCONSISTENT PRODUCT PURITY
LOWER COST METHOD ON NEW PLANT ADDITION
The 16" Reineveld Laboratory Centrifuge, installed in Heyl & Patterson's Research Laboratory. This model, particularly designed for laboratory test work, is a valuable tool in plant laboratories for testing and for improving plant processes.

When you are faced with a processing problem concerning the separation of solids from liquids or the separation of two liquids, call on the test facilities of Heyl & Patterson and the 50 years of Reineveld's centrifugal experience.

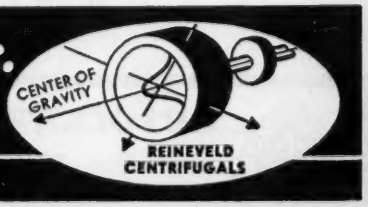
Reineveld Centrifuge installations cover all types of products and difficulties from the fast dewatering of free-draining, large tonnage salt crystals to the extra-tough problem of dewatering Anthracene, a slow-draining, plastic-type crystal.

This abundant experience, combined with actual tests in Heyl & Patterson's testing laboratory, could provide the very answer you are looking for. Or, if your work is confidential, we will gladly offer suggestions for centrifuge testing in your own laboratory.

Whenever you are confronted with new or unusual processing problems, remember Heyl & Patterson testing facilities.

Write for Booklet 10-RC-2

Heyl & Patterson, Inc.
"SINCE 1887"
55 WATER STREET - PITTSBURGH 22, PA.



When inquiring check CP 8540 on handy form, pgs. 2-3

you save 50% in TANK HEATING and COOLING with PLATECOIL

★ You SAVE 50% in tank SPACE
★ You SAVE up to 50% in initial COST
★ You have 50% LESS WEIGHT to handle
★ You SAVE 50% in maintenance LABOR as plates are changed from outside the tank without dumping solution

. . . besides all these you get faster heating or cooling. Take advantage of the engineering assistance offered by Kold-Hold to help you with your heat transfer problems.

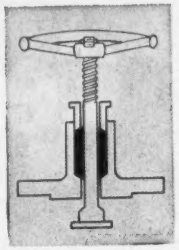
Send for complete technical manual and descriptive Bulletin No. P54.

PLATECOIL
KOLD-HOLD MFG. CO.
LANSING 7, MICHIGAN

When inquiring check CP 8541 on handy form, pgs. 2-3

Du Pont Teflon* is inert to almost all chemicals

Tough Du Pont plastic resists heat up to 500° F. . . . has zero water-absorption . . . unique non-adhesive properties



Du Pont "Teflon" tetrafluoroethylene resin is superior in chemical resistance to any other known gasket or valve-packing material. It has lasted up to 300 times longer than conventional materials.

"Teflon" resists attack of all corrosive chemicals (except fluorine under extreme conditions, and molten alkali metals) . . . has a low coefficient of friction and zero water-absorption. It serves well in temperatures from -320°F. to 500°F., under pressures up to 30,000 lbs/in². The unusual non-adhesive properties of "Teflon" make it ideal for uses where a non-sticky surface is needed.

"Teflon" is used in gaskets, packing for pumps, valves, pistons and agitators . . . as an insulating material for generators, motors, high-temperature and high-voltage wires and cables.

We suggest you investigate the properties of "Teflon." Du Pont supplies "Teflon" in the form of molding powders and aqueous dispersions. We'll suggest names of suppliers of sheets, rods, tubes or finished parts. For information, write:

*REG. U.S. PAT. OFF.

E. I. du Pont de Nemours & Co. (Inc.)
Polychemicals Dept., District Offices:
350 Fifth Avenue, New York 1, N. Y.
7 S. Dearborn St., Chicago 3, Ill.
845 E. 60th St., Los Angeles 1, Cal.

DU PONT
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BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

When inquiring check CP 8542 on handy form, pgs. 2-3

Removes fine particles from water and automatically flushes them from strainer media . . .

rotating drum permits continuous self-cleaning

Fine particles can be removed from raw or process water and disposed of continuously by automatic, self-cleaning strainer. Unit, which is available in 2 to 36" pipe line sizes, consists essentially of a rotating drum containing removable straining elements.

Self-cleaning strainer

Drum is mounted on a vertical shaft and housed in a cast iron body. Units are also constructed of non-corrosive materials to strain sea water, ammoniacal liquor, gasoline, oil, as well as various other similar liquids.

Water or other liquid to be filtered, enters through an inlet at the bottom of the housing and rises on the outside of the revolving drum. Liquid passes through the drum, while the dirt and foreign matter are retained on the surface of the strainer elements. Clean liquid passes to outlet which is diametrically opposite the inlet.

Backwash orifice is supplied so that when the foreign matter, carried on surface of strainer elements, passes this vertical opening, a reversal of flow takes place, flushing and cleaning the strainer media. This reversal of flow is caused by a pressure differential between the interior of strainer and atmospheric pressure. Drum rotates at a speed of six revolutions per minute, cleaning each row of elements every ten seconds.

Closed-top drum eliminates a wear and leakage point between the drum and body. At the bottom of the body, where the drum makes contact, a synthetic rubber seal is installed. This seal is said to achieve a 100% separation between clean and unfiltered liquid. More than 100 lb pressure was tested against seal with no evidence of leakage. Pressure drop within strainer is reduced by making the area of the body inlet larger than the opening in the flange. Outlet is constructed in a similar manner.

Driving mechanism consists of a standard vertical motor and a separate gear box. Design of unit has been simplified in that body and lower supporting structure are cast into one form. Durability of construction is said to minimize maintenance.

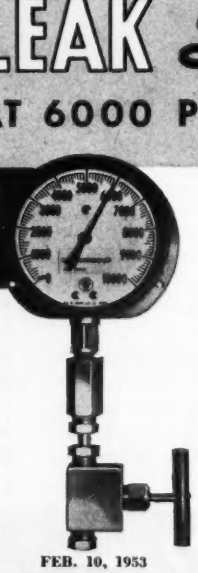
If the strainer is to be installed on the suction side of a pump, it can be equipped with a pressure backwash. This is done by using a straight drum instead of a tapered one, and installing a backwash shoe. Provisions are made so that water from the pressure side of the pump can be piped into the strainer and through the backwash shoe to clean the strainer media.

Autoclave NO-LEAK Speed Valve
HELD AT 6000 PSI FOR 30 DAYS

JAN. 10, 1953

No PRESSURE DROP REGISTERED

This valve was photographed twice...30 days apart. As you can see pressure was constant over the test period. Dependable performance is typical of AUTOCLAVE ENGINEERS' products. Another important AE feature is service. The valve and all fittings used for the test are in-stock items. A point to remember about high pressure equipment.



FEB. 10, 1953

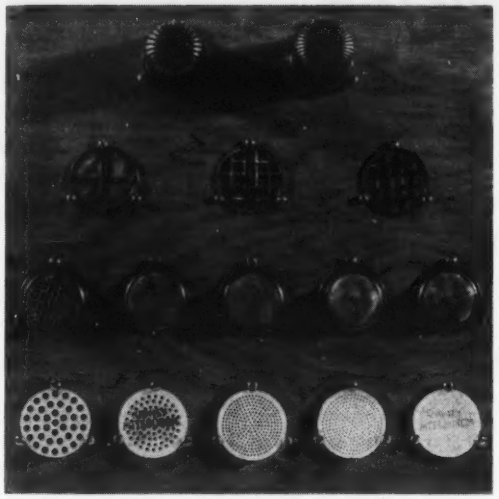
Check these features:

1. Internal parts precision machined.
2. Standard packing is inert and trouble free Teflon, specially compounded.
3. Ermeto connections make threading unnecessary. No contaminating pipe dope.
4. Exceptionally low torque (1-2 foot lbs). Fingertip control at 6000 psi.
5. Valves available in all styles and two sizes. (¼" & ⅜" O. D. Tube).
6. Complete line of matching fittings available. Also adapters to inter-connect speed line to I.P.S. or conventional high pressure.
7. Make and break connections over 100 times.
8. All valves, fittings and tubings in stock.

AUTOCLAVE ENGINEERS, INC.
ERIE, PENNSYLVANIA
EXPORT DEPT. • 751 DREXEL BLDG. • PHILADELPHIA 6, PA.

For more about SPEED VALVES, Write for Bulletin 3153, Dept. P33

When inquiring check CP 8543 on handy form, pgs. 2-3



Varieties of straining media include bronze slotted cones, flat stainless steel reinforced disks, stainless steel cones, and glazed porcelain disks which have tapered holes

Type of foreign matter in the liquid and the desired degree of cleaning determine the kind and size of straining media to be used. Available media, as shown in accompanying illustration, are constructed from stainless steel, bronze, or porcelain — with stainless steel being suitable for most applications. Where fibrous materials are encountered, bronze slotted cones are satisfactory. Porcelain disks have tapered holes and a glazed surface which repels the matting of dirt and other foreign matter.

Unit is made so that the strainer media can be readily interchanged. Only through actual operation on the job is it possible to definitely ascertain the most practicable media. In cases where liquid is extremely dirty, an ideal installation would include a few strainers installed in series. With this set-up, the first strainer would contain a very coarse media, the second one somewhat finer, and the third one still finer. Number of strainers required depends on conditions and degree of cleanliness desired.

(Designed and produced by S. P. Kinney Engineers, Inc., Dept CP, Carnegie, Pa. . . . or for more information check CP 8544 on handy form, pages 2 and 3.)

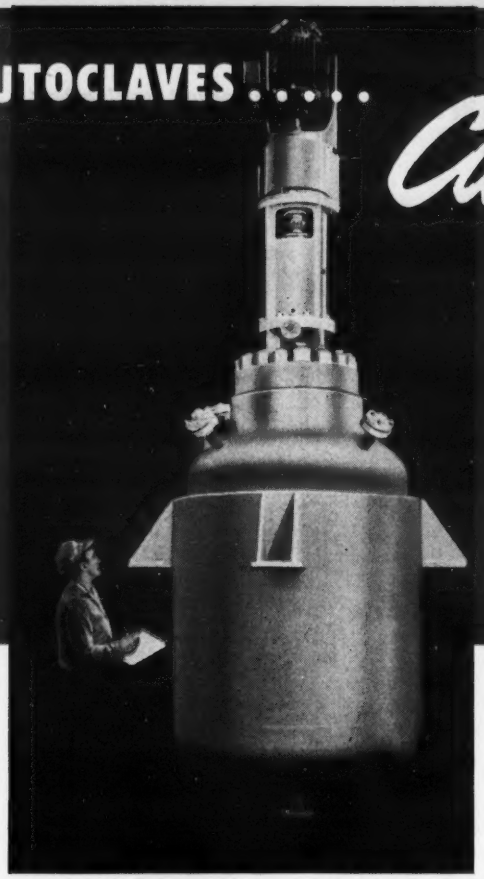
Heat transfer equipment illustrated in catalog

Illustrated catalog covers many types of heat transfer equipment including cleanable and counterflow condensers, both shell-and-coil and shell-and-tube; liquid receivers; stainless steel evaporators; and adjustable capillary valves. Applications listed include refrigeration and air conditioning.

Catalog of heat transfer equipment is issued by Standard Refrigeration Co., Dept. CP, 322 S. Hoyne Ave., Chicago 12, Ill. When inquiring specify CP 8545 on handy form, between pages 2 and 3.

AUTOCLAVES . . . . . Custom Built

IN ANY CAPACITY
FOR ANY PRESSURE
ANY TEMPERATURE
ANY REACTION



A 500 gallon, 1875 PSI Autoclave designed and built by Blaw-Knox for processing an additive for aviation gasoline.

Time and expense are saved, doubts and experiments eliminated when you turn your Process Equipment problems over to Blaw-Knox. Long experience in both design and fabrication assures your autoclave or other reaction vessel of high performance, maximum safety and ruggedness for long service. Working from clients' drawings or our own designs Blaw-Knox Equipment Division has built highly successful autoclaves for:

ESTERIFICATION—Production of esters through alcohol-acid reactions . . . POLYMERIZATION—Reactions involving the addition or agglomeration of molecules to increase molecular weight . . . SULFONATION—Reactions with organic compounds employing the sulfonic acid group . . . ORGANIC SYNTHESIS—Combination, reaction, or mixing of various organics . . . NITRATION—Chemical reactions involving combination or treatment with the nitro group . . . HYDROGENATION—Reactions of combination or reduction with hydrogen . . . ALSO: Ammonolysis . . . Emulsification . . . Impregnation . . . Halogenation . . . Crystallization . . . Sublimation . . . General High Pressure Processing, Etc.

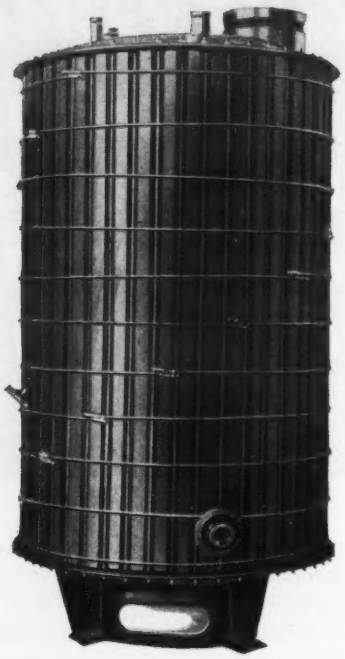
BLAW-KNOX

BLAW-KNOX
EQUIPMENT DIVISION
BLAW-KNOX COMPANY
PITTSBURGH 22
PENNSYLVANIA

When inquiring check CP 8546 on handy form, pgs. 2-3

FOR BIG, CORROSION-RESISTANT TANKS

HAVEG IS A LOGICAL ANSWER...

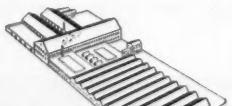


Get what you want with a Haveg-engineered tank. Haveg is not a lining or coating. It is a solid, non-metallic material (resistant to corrosion through and through) that is molded by the Haveg Corporation into tanks as large as 10 feet in diameter by 12 feet in depth. These are single piece, without seams or joints. By joining such sections, even larger tanks can be built. Low cost, with exceptionally long life.

From top to bottom, a Haveg tank has special design features to improve handling acids, bases, salts in your plant. Flat, sloping, cone, dished bottoms are molded to fit your drainage needs. Because Haveg can be machined and repaired on the spot, any change in piping is easily made by your own plant crew.

Work with a company that understands how to fight corrosion. Haveg has thousands of molds for any type of chemical handling equipment. Get the complete Haveg story by contacting your Haveg sales engineer and writing for a 64-page technical bulletin (F-6). It shows tank sizes, installation and machining tips, complete chemical resistance tables. Write now . . . for Haveg is a logical answer, both material and engineering-wise, for corrosion-resistant tanks, towers, pipes, valves, fittings.

The Haveg factory is at Marshallton, Delaware (phone Wilmington 3-8884). Capacity has been increased, with deliveries improved. Why take less, when you can get proven, long-life Haveg?



HAVEG CORPORATION
NEWARK 7, DELAWARE

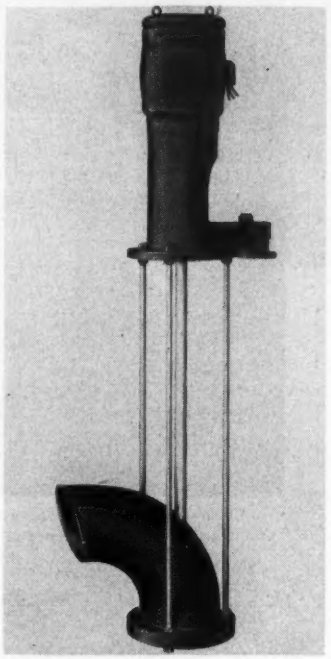
SALES ENGINEERS: Atlanta • Chicago • Cincinnati • Cleveland • Detroit • Hartford • Houston • Los Angeles • Marshallton, Del. • Seattle • St. Louis

When inquiring check CP 8547 on handy form, pgs. 2-3

Submerged stuffing box eliminated in tubular agitator . . .

provides easy accessibility for maintenance

Uses: Unit was originally designed to meet need of steel industry for consistent and thorough agitation of long rectangular pickling tanks. It has equally important applications in fields where



Agitation is produced by high speed marine propeller which causes flow up through and horizontally out of bend

tank geometry does not allow optimum agitation with standard methods.

The agitator is especially suitable for agitation in varnish tanks, molten sulfur vats, plating tanks, constant temperature baths, and tank cars and trucks.

Features: Physical disadvantages of conventional equipment — such as a submerged stuffing box and inaccessibility for maintenance — have been eliminated.

Description: Agitator was designed to meet the demand for a top-entering unit which would have the hydraulic advantages of side-entering equipment. When installed, the special draft bend is completely submerged in mix. High speed marine propeller produces

FILTER YOUR SOLUTIONS
50-1500 GALLONS/HOUR

Model ASI-600
Cap. 850 gal/hr
Sethrin Resin Filter Assembly
Portable, Wt. 150 lb.
2' x 2' x 2'

SETHCO FILTER PUMP ASI-600

Distributors in All Principal Cities

- Filter solutions from ph 0 to ph 14.
- No loss of precious solutions.
- Stainless Steel (316) or Hastolloy Pump and Fittings.
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- Cotton, Dynel, Orlon, Nylon, Spun Glass, Porous Stone or Porous Carbon Filter Tubes.

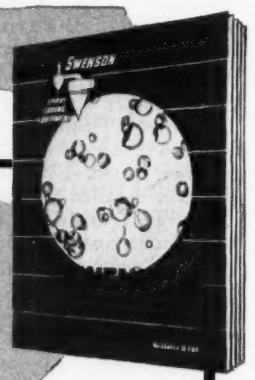
*Reg. App. for

Write for literature

Sethco MFG. CO. 72 Willoughby Street Brooklyn 1, N. Y.

When inquiring check CP 8548 on handy form, pgs. 2-3

look into
Spray Drying
for chemical processing



Have you considered how spray drying might improve your product and widen your markets? Heres a book to tell you more on Swenson equipment and engineering... ask for your copy now!

SWENSON EVAPORATOR CO.
15667 Lathrop Avenue, Harvey, Illinois

SWENSON
Process Engineering for the Process Industries
SINCE 1898

A Division of WHITING Corporation

When inquiring check CP 8549 on handy form, pgs. 2-3

positive flow up through and horizontally out of the bend. Available sizes range from ¼ to 25 hp. Parts within the "wetted" area are furnished in materials required by the application.

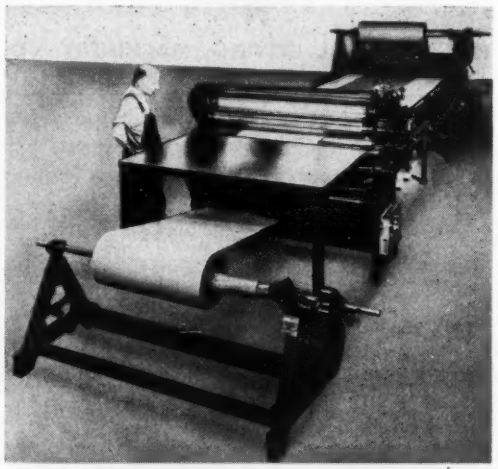
(TurboTube Agitator is development of Chemineer, Inc., Dept. CP, 511 W. Second St., Dayton, Ohio . . . or for more information check CP 8550 on handy form, pages 2 and 3.)

One machine glues and laminates plastic, metal, paper, and other products

Uses: Designed for continuous lamination of sheet or rolls of leather, cork, plastic, metal, paper, and other materials.

Features: The fifty-inch wide unit is a combination conveyor, gluing machine, and laminator.

Description: Laminator will blend materials of varying thickness and coatings of adhesive are easily controlled by single adjustment of dial. For hot glues an electric glue heater in the tank, which



Combination conveyor, gluing machine, and laminator is shown in operation

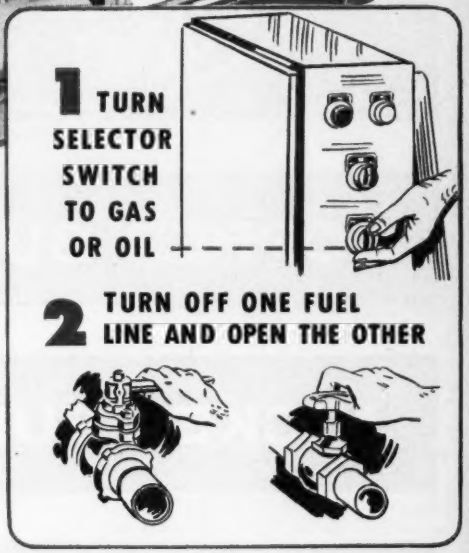
can be removed for cleaning, keeps adhesive at correct consistency. Over-running clutch and auxiliary drive on coating unit permit the coating rollers to run continuously in order to eliminate possibility of adhesive drying on rollers.

A single adjustment controls pressure over the entire surface of combining rollers. Laminator is equipped with a shaft-type rewind and with two unwind stands to handle 40" diameter rolls of material. It is constructed with cast iron frames and has approximate length, width, and height dimensions of 22 x 6 x 7 feet.

(Manufactured by Potdevin Machine Co., Dept. CP, 285 North St., Teterboro, N. J. . . . or for more information about this development, reader may simply check CP 8551 on handy Reader Service slip between pages two and three.)

NOW... interchange Gas and Oil firing in *10 seconds*

Modern Cleaver-Brooks Model LR Steam Boiler Equipped with Exclusive Cleaver-Brooks "10-second conversion" Combination GAS and/or OIL Burner



TWO, simple motions eliminate time-consuming change-over

Now you can use oil or gas at the flick of a switch! This exclusive new Cleaver-Brooks development permits changeover from oil to gas or vice versa in only 10 seconds.

That's because the Cleaver-Brooks Combination Gas and/or Oil Fired Boiler operates on gas *with the oil burner in place*. Simply flipping a selector switch on the control panel to either gas *or* oil sets the proper circuit in action. Turning the convenient fuel supply valves completes the entire changeover — and in 10 seconds or less!

To gas users in all parts of the country — and in particular areas where local requirements demand immediate changeover — this exceptional fuel flexibility can be an important factor in determining your overall operating economy.

Ten-second conversion, like 4-pass construction, self-contained design, guaranteed 80% efficiency, is another "plus" feature pioneered by Cleaver-Brooks. It demonstrates Cleaver-Brooks' continuing effort to bring steam users even greater flexibility and reduced operating costs.

If you are considering simplifying your present boiler plant, remember Cleaver-Brooks Combination GAS and/or OIL Fired Boilers. Sizes 15 to 500 h.p. — 15 to 250 p.s.i. Write for complete facts.

Cleaver-Brooks
Originators of the Self-Contained Steam Boiler

CLEAVER-BROOKS COMPANY
Dept. C, 349 E. Keefe Ave., Milwaukee 12, Wis., U.S.A.
Cable Address: Clebro-Milwaukee-wis
Builders of Equipment for the Generation and Utilization of Heat • Steam Boilers • Oil and Bitumen Tank-Car Heaters • Distillation Equipment • Oil and Gas-Fired Conversion Burners

When inquiring check CP 8552 on handy form, pgs. 2-3

PHELPS DODGE REFINING CORPORATION
NICHOLS
TRIANGLE BRAND
REG. U. S. PAT. OFF.
CHEMICALS
40 WALL ST. NEW YORK

COPPER SULPHATE

NICKEL SULPHATE

SELENIUM

TELLURIUM

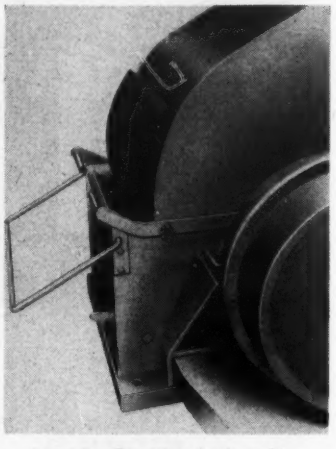
PHELPS DODGE REFINING CORPORATION
40 Wall Street, New York 5, N. Y.
230 North Michigan Avenue, Chicago 1, Illinois

When inquiring check CP 8553 on handy form, pgs. 2-3

Quick screen changing saves time and power in hammermill . . .

guard makes changes safe while running

Screen replacements in a few seconds, during operations, are made possible by design of hammermill. Where varying materials and grist sizes require frequent screen changing, unit will save considerable time and power, according to manufacturer.



Lever handle swings back, making screen accessible for removal

Without stopping the mill or opening the cover, screen is easily withdrawn and replaced, sliding smoothly on non-binding, leak-proof grooves. It is not necessary to

Wing nut which releases hand guard is shown in photo on front of hammermill

remove any other parts. Wing nut is loosened to release hand guard prior to changing screen. This provides utmost safety against exposure to the whirling hammers. Lever lock is then tripped, making screen accessible for removal.

Complete range of sizes, from 20

If a **TRUCK DRYER** *is Suitable for Your Product...*

Send for a copy of this illustrated booklet. It describes the various styles of dryers and trucks, and the "National" formula for securing maximum speed, efficiency and economy in all drying operations.

"National" Truck Dryers are being used successfully for chemicals, pharmaceuticals, ceramics, cosmetics, minerals, yarn, rayon cakes, tobacco, a variety of food products and small metal or mechanical parts. They are designed for either batch or continuous drying, with various methods of air circulation. Patented "Add-a-Unit" construction facilitates installation and provides for economical future expansion. The booklet gives complete details.

Chemical Dryers of All Types and Sizes — NATIONAL — Special Drying and Heating Equipment

THE NATIONAL DRYING MACHINERY CO.
2709 N. Hancock Street, Philadelphia 33, Pa.

When inquiring check CP 8554 on handy form, pgs. 2-3

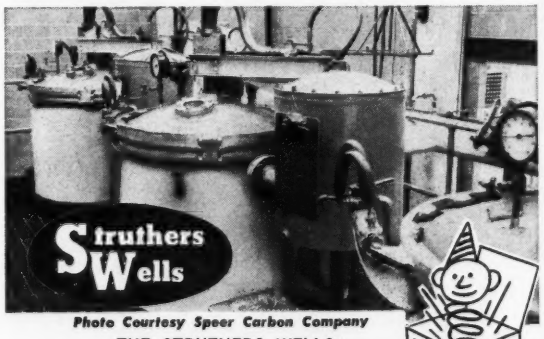


Photo Courtesy Speer Carbon Company

THE STRUTHERS WELLS
IMPREGNATOR
. . . with the Quick Opening Closure!

for Impregnating Electrical Coils, Aluminum or Magnesium Castings, Carbon Parts and Other Materials

Write for Bulletin B-38 (on your letterhead, please)

The improved Struthers Wells impregnating system illustrated—one of many recent installations—is heated with circulating hot oil, with a separate hot air system for preheating the charge before impregnation. Covers are quickly removed or installed—with great savings in operating labor. Furnished as bare units, or complete with piping, instruments and accessories. Heated by steam, electricity or circulating heat transfer medium.

STRUTHERS WELLS CORPORATION
WARREN, PA.
Plants at WARREN, PA. and TITUSVILLE, PA.

When inquiring check CP 8555 on handy form, pgs. 2-3

to 125 hp, is available in belt-driven and direct-connected models. Construction is all-welded steel.

(Quick Screen Change Hammermill is manufactured by Schutte Pulverizer Co., Dept. CP, 27 Clyde Ave., Buffalo 15, N. Y. . . . or for more information check CP 8556 on handy form, pages 2 and 3.)

Size reduction methods — what, when, where, why

IMPACT

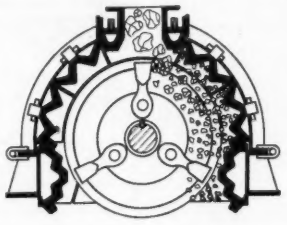
Impact, as used in crushing technology, has reference to the sharp, instantaneous blow resulting from a moving body striking another body. It can be either "free-air" impact or gravity impact.

Examples of free-air impact are throwing a piece of coal into the air and breaking it by hitting it with a bat, or throwing a breakable object against a brick wall.

An example of gravity impact would be dropping an object from a height to a hard surface, such as a cement floor or a steel plate.

Free-air impact has definite advantages in crushing materials. It should be used and specified—

1) When a minimum of fines is desired in the finished product.
2) When a more cubical particle shape is needed or desired.
3) Where the finished product should be well graded from the top size to the bottom. In other words, where intermediate sizing specifications must be met as well as top and bottom specifications.
4) In many cases, ores contain foreign or unwanted materials — such as mica in some felspars, etc. Impact crushing will cause such ores to break along their natural cleavages — thus freeing the wanted material from the foreign, and preparing it for successful separating or cleaning.
5) When materials must be crushed that are too hard and abrasive for standard hammermills, and yet cones or jaw crushers cannot be used because of required particle shape, dampness, etc, impactors will handle such damp or abrasive materials successfully. Since crushing is by free-air impact, attrition is eliminated and power and maintenance costs are kept at reasonably low figures.



Reduction by impact is illustrated by Pennsylvania Reversible Impactor

ATTRITION

Attrition is the term applied to the method of reducing a material by subjecting it to a grinding or

(Continued on next page)

A new synthetic treasure where Spain once fought for gold

IN PERU, gold ruled the economy when the Spanish conquerors first came. But today, new chemical products are important factors in the country's prosperity.

And when an enterprising Peruvian recently decided to construct the country's first detergent plant, he came to Pfaudler for process engineering assistance and equipment that could be built to standardized designs.

Here are four reasons why he chose Pfaudler. They may interest you in connection with some problems of your own.

1. **OVER-ALL ENGINEERING**—Pfaudler's long experience in working on such problems as pressure requirements, heat transfer and agitation helps you get many customized features at the price of standard equipment.

2. **ALLOY SELECTION**—To assure maximum service life, Pfaudler selects each material to meet the individual requirements of your installation. Pfaudler offers a complete range of alloys and finishes.

3. **ENGINEERED AGITATION**—Whether your process involves gas absorption, emulsification or suspension of solids—Pfaudler has developed formulae and equipment to take the guesswork out of solving agitation problems.

4. **PROCESS KNOW-HOW**—Pfaudler has specialized in the fabrication of chemical and food processing equipment for 65 years. And Pfaudler process engineers are always prepared to help you with any phase of your equipment problems—including design, construction, installation and operation.

For full details on Pfaudler standard and custom built alloy processing equipment, ask for Bulletin 893. It contains much useful information that you may frequently find valuable to have on hand. Write for your copy today.

Pfaudler

THE PFAUDLER CO.
ROCHESTER 3, N. Y.
Engineers and fabricators of corrosion resistant process equipment

GLASSED STEEL • HASTELLOY • ALUMINUM • CARBON STEEL • SOLID OR CLAD STAINLESS STEEL • NICKEL • INCONEL • MONEL

When inquiring check CP 8557 on handy form, pgs. 2-3

Is a Specialist in LEAD PRODUCTS Really a Better Supplier for YOU?

There is a theory that a man who specializes in mousetraps will build better mousetraps than one who makes merely wood or metal products.

Others say, "Specialists are those who know more and more about less and less."

Federated believes that the hundreds of products of non-ferrous origin have a basic family resemblance, and that the more we know about all, the more we know about each. Thus lead is found with silver and antimony, and copper and tin are found with iron. These various elements and others must be separated and refined, or in some cases, discarded. Then, re-combined in different ways, they make brass, bronze and aluminum ingots; solders and type metals; die casting alloys, lead products and bearing metals; anodes for plating and for cathodic protection.

Federated's competent organization of scientists and technicians, and its widespread field force of servicemen are unified under the central policy of producing quality products and making these products most useful to every Federated customer.

We count it an advantage to our customers that Federated's organization is big enough to specialize in quality control and service from the depths of the mine to the user's shop. It is one of the reasons that Federated is known as "Headquarters for Non-ferrous Metals."

Federated Metals Division

AMERICAN SMELTING AND REFINING COMPANY
120 BROADWAY, NEW YORK 5, N. Y.

In Canada: Federated Metals Canada, Ltd., Toronto, Montreal

Aluminum and Magnesium, Babbitts, Brasses and Bronzes, Anodes, Die Casting Metals, Lead and Lead Products, Solders, Type Metals

When inquiring check CP 8558 on handy form, pgs. 2-3

A Book You Should Have on Mechanical Sealing...

A complete reference catalog on Dura Seal—the engineered mechanical seal that rotates with the shaft. Amply illustrated . . . specific applications . . . installation data. A fact book of real value to designers, operators and maintenance departments.

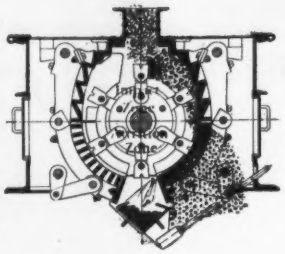
WRITE FOR DURA SEAL CATALOG NO. 455 CP

DURAMETALLIC CORPORATION
KALAMAZOO, MICHIGAN

When inquiring check CP 8559 on handy form, pgs. 2-3

(Continued from preceding page)

rubbing action between two surfaces. Though this action requires a higher consumption of power and exacts heavier wear on the grinding surfaces, it has its place in the crushing of certain materials. Attrition grinding should be specified —



Pennsylvania Reversible Hammermill with center feed provides both impact and attrition crushing

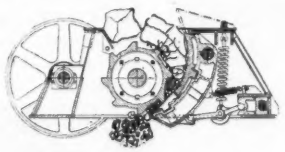
1) When material is friable and not too abrasive (low silica content usually required).
2) When closed-circuit grinding is not feasible or desirable.
3) When a maximum of fines is wanted in the finished product.

Hammermills are typical attrition grinding mediums. However, hammermills can be of various designs and care should be taken in their selection to assure the operator that he has the most desirable features to provide him the lowest grinding costs, as well as the desired grind.

SHEAR

Shear, as applied to crushing machinery, is usually found in crushers employing more than one mechanical reduction method. For instance, shear is found in combination with attrition in a hammermill, or in combination with impact and compression in a single roll crusher.

Since shear is found in combination with other methods, its importance in the selection of a crusher varies with the importance of the other mechanical methods with which it is combined.

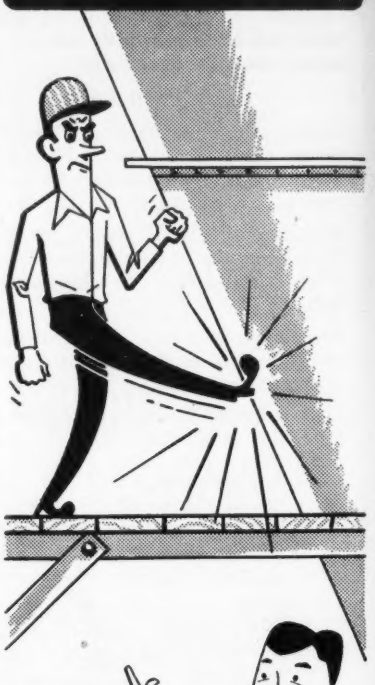


Reducing large feed by a combination of impact, shear, and compression with Pennsylvania Single Rolls

For example, in a hammermill, shear importance is negligible — attrition is the important item. However, for coarser crushing, such as done by a single roll crusher, shear is a very definite step and is highly important. This type of shear should be specified —

1) When material is fairly friable (compressive strength usually under 15,000-20,000 psi) and containing a relatively low silica content.
2) When large reduction ratio is needed. It is not unusual for a single roll crusher to handle 40" cubes (or larger) and reduce them to 5" cubes.
3) When a minimum of fines is desired.
4) When a relatively coarse product is wanted — usually no finer than 1½" top size.

BIN STUCK LATELY?



"That's one way to loosen up your stuck dry chemicals. But it's not effective or thorough and it's too slow. Use a Cleveland Vibrator instead like hundreds of other chemical companies are doing. Materials which are bridging, arching or sticking will start moving fast."

"AIR" FOR ECONOMY.

Literature and details on request of course.

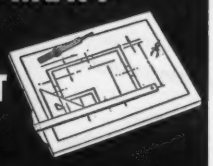
THE CLEVELAND VIBRATOR COMPANY

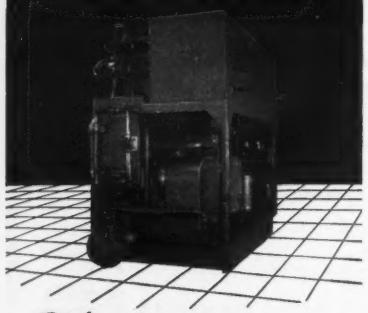
2706 Clinton Ave. • Cleveland 13, Ohio

When inquiring check CP 8560 on handy form, pgs. 2-3

COMPLETE

PROCESS EQUIPMENT from PRINT to PRODUCTION





What is your processing problem?

Cold, heat, high pressure, vacuum or moisture in any combination? Bowser custom engineered equipment can provide the right answer.

Temperatures obtainable range from −100° F. or colder to +550° F. or more; moisture control from absolute minimum to saturation; and pressures from one micron to 500 p.s.i. and greater.

In addition to production models, Bowser's experienced technicians also design and construct laboratory size units to test process factors under consideration, and pilot-run models to assure maximum efficiency and economy.

Bowser provides *complete* processing equipment and engineering.

Write for further information or ask for a field engineer.

BOWSER

TECHNICAL REFRIGERATION

DIVISION BOWSER INC.

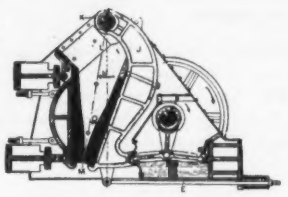
TERRYVILLE • CONN.

When inquiring check CP 8561 on handy form, pgs. 2-3

CRUSHING BY PRESSURE

Pressure as a mechanical reduction method should be specified —

1) When the material is hard and tough.
2) If the material to be crushed is abrasive.
3) If material is not sticky.
4) When a uniform product with a minimum of fines is desired.
5) Where the finished product is to be relatively coarse — usually 1½" or larger, top size.

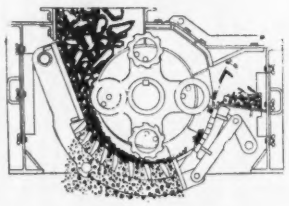


Kue-Ken Jaw crushes without rubbing. Plates last 5-10 times longer

ROLLING COMPRESSION

Rolling compression is a unique adaption of the compression reduction method. It is usually found in a hammermill type crusher equipped with special ring-type hammers. Rolling compression should be specified—

1) For friable materials.
2) High reduction ratio. Oftentimes a reduction from 15 to 20" lumps down to a nominal ¾" or finer top sized product can be obtained from one-stage crushing.
3) Where material isn't inclined to be sticky.
4) Where a minimum of extreme fines is desired.

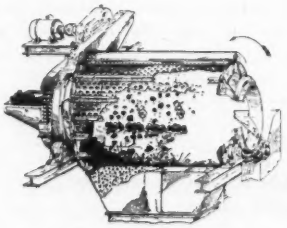


Pennsylvania Ring-Type Granulator, with rings that roll, provides attrition-free compression

GRAVITY IMPACT

In contrast to reduction by impact in free air, another form of impact reduction is by gravity, where falling material shatters upon striking a surface. Gravity impact, as applied to a crushing machine, differs greatly in its application and should be specified when —

1) Material is highly friable.
2) Material is not sticky.
3) A relatively coarse product is desired (usually a nominal ¾" top size or larger).
4) A minimum of fines is wanted.



Two different materials can be cleaned and separated by means of the Bradford Breaker

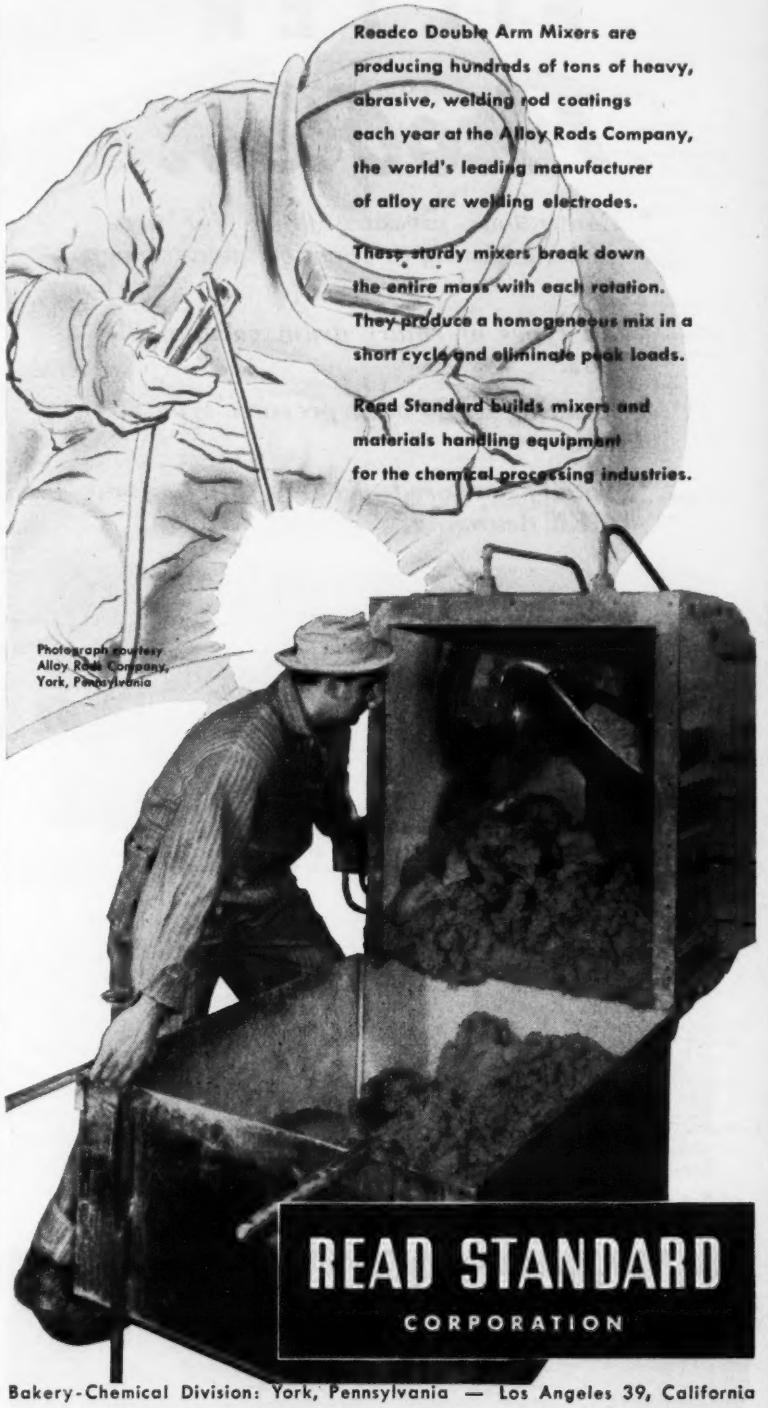
(Illustrations are size reduction units recommended for specific jobs noted, and manufactured by Pennsylvania Crusher Company, Dept. CP, Liberty Trust Building, Philadelphia 7, Pa. . . . or for more information check CP 8562 on form, pages 2 and 3.)

only strong arm methods survive these tests

Readco Double Arm Mixers are producing hundreds of tons of heavy, abrasive, welding rod coatings each year at the Alloy Rods Company, the world's leading manufacturer of alloy arc welding electrodes.

These sturdy mixers break down the entire mass with each rotation. They produce a homogeneous mix in a short cycle and eliminate peak loads.

Read Standard builds mixers and materials handling equipment for the chemical processing industries.



Photograph courtesy Alloy Rods Company, York, Pennsylvania

READ STANDARD

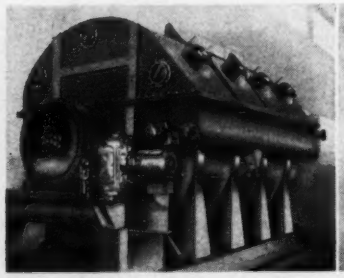
CORPORATION

Bakery-Chemical Division: York, Pennsylvania — Los Angeles 39, California

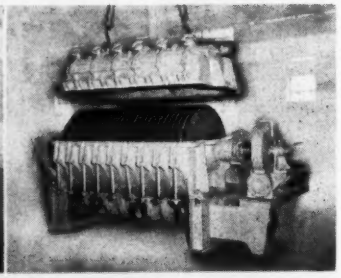
When inquiring check CP 8563 on handy form, pgs. 2-3

GOSLIN-BIRMINGHAM
Can Solve Your
FILTER
Problem

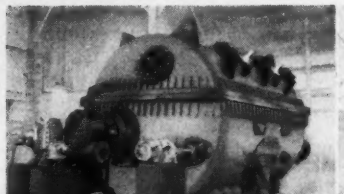
- *Continuous pressure filters for propane dewaxing or chemical plant service.*
- *All types of rotary drum vacuum filters.*
- *Rotating leaf Vallez pressure type filters.*
- *Totally enclosed vacuum filters for MEK dewaxing.*



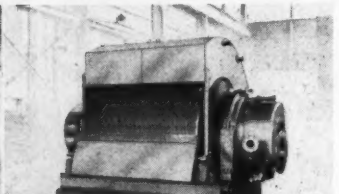
10' x 16' MEK dewaxing filter with 500 square feet effective surface.



Series 40 rotating leaf Vallez pressure filter, cast iron body, stainless steel element and cloth.



8' x 16' continuous pressure filter for propane dewaxing service.



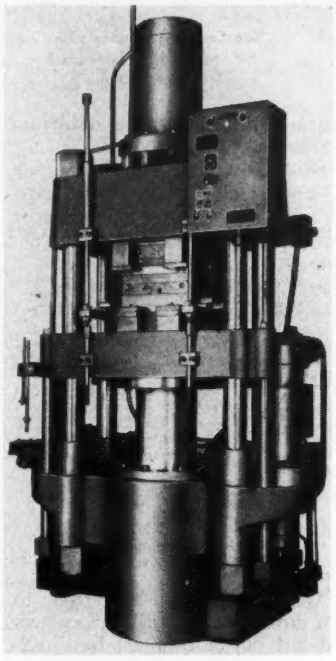
Continuous vacuum type salt filter of all Monel construction.

GOSLIN-BIRMINGHAM
MANUFACTURING CO., INC.
BIRMINGHAM, ALABAMA
CHICAGO: T. M. deBeers and Associates, 20 N. Wacker

When inquiring check CP 8564 on handy form, pgs. 2-3

20 to 400 ton presses for molding rubber or plastic

Manufacturer's hydraulic presses have a pressure range from 20 to 400 tons and are specifically intended for plastic and rubber molding. The semi-automatic pressure



Hydraulic press intended for rubber and plastic molding

controls are augmented by self-contained fast traverse, governed pressures, up and down stroke, and top or bottom transfer.

(Manufactured by Logan Engineering Co., 4901 W. Lawrence Ave., Chicago 30, Ill. . . . or for more information check CP 8565 on handy form, pages 2 and 3.)

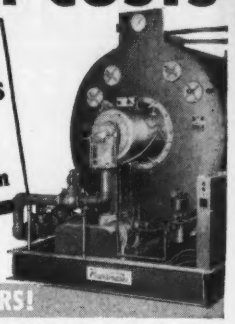
Shows drum tumbler and mixer

Two-page bulletin pictures and describes single and double drum tumbling mixers which accommodate 55-gal drums, and paddle-arm mixer which can be attached to 20 to 75-gal drums.

Issued by The Cleveland Mixer Company, Dept. CP, 3236 W. 33rd St., Cleveland 9, Ohio. When inquiring specify CP 8566 on handy form, between pages 2 and 3.

CUT STEAM COSTS

Powermaster®
PACKAGED AUTOMATIC BOILERS
with patented
VORIFLOW® Combustion



SAVE FUEL and MAN-HOURS!

Thousands of Powermaster users are now getting top efficiency and low-cost steam or hot water for processing and heat after replacing out-of-date boilers with this modern, fully automatic, "packaged" steam generator.

- **High efficiency cuts operating costs as much as 40%**
- **Packaged design saves excessive installation costs**
- **Automatic operation frees engineer for other duties**
- **Mounted on steel base—no bricking required**
- **Delivered fully wired and factory-tested**
- **Prompt service by factory-trained men**

15 to 500 HP—FOR HOT WATER AND FOR STEAM UP TO 250 P.S.I.—for light oil, heavy oil, gas and combination gas/oil firing. Built to A.S.M.E. specifications and approved by Underwriters' Laboratories.

FREE CATALOG MAILED PROMPTLY

ORR & SEMBOWER, INC.
960 Morgantown Rd. Reading, Pa.

When inquiring check CP 8567 on handy form, pgs. 2-3

SMOOTH—VIBRATIONLESS
PROPELLERS

for **MIXING, STIRRING AERATING, PUMPING, etc.**

Manufactured by an exclusive process, MICHIGAN propellers are perfectly balanced to avoid whip and strain on shafts. And because of their superior functioning are now standard parts of the products of many leading equipment manufacturers.

Available for special application and replacement, as well as original equipment, in a wide variety of metals and in sizes up to 60". Write for latest data folder.

Side Entering Mixer by
EASTERN INDUSTRIES
NEW HAVEN, CONN.

MICHIGAN WHEEL CO.
GRAND RAPIDS 3, MICH.

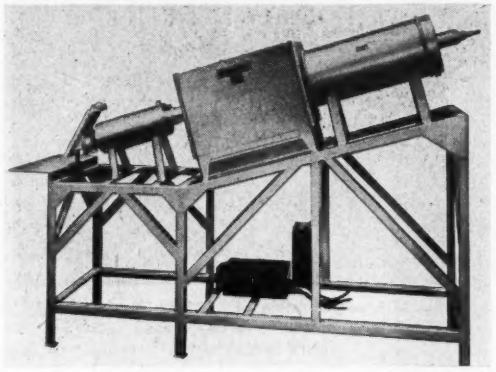
When inquiring check CP 8568 on handy form, pgs. 2-3

Germanium oxide reduced to 97% pure metal in simple set-up . . .

process is conducted in quartz tube running through three-section electric furnace

The apparatus shown in the accompanying illustration is used in processes for production of germanium from the oxide. In it, the oxide is reduced to a relatively pure metal in a hydrogen atmosphere and finally delivered as an ingot for further purification.

Unit uses a three section electric furnace, mounted on a single stand, and inclined for ease of operation. A 6′ fused quartz tube extends through the water-cooled section at the lower end of the unit, up through the high-temperature section, and into the lower-temperature first-stage furnace. The tube is reduced at the upper end where the hydrogen is admitted. A small hydrogen flame at the lower door opening indicates the rate of hydrogen flow.



Three-section electric furnace, with quartz tube running through, is used in production of germanium

Germanium oxide powder is placed in small boats or trays which are then pushed up the quartz tube, through the water-cooled section and the high-temperature section, into the first-stage furnace. There the oxide is reduced in a hydrogen atmosphere at 650°C. A 3½ hour soak in this furnace will yield approximately 87% pure metal, while a 4 hour soak yields 97%. The temperature has to be accurately controlled because the oxide vaporizes at high temp.

After the 4 hour soak, the boats are pulled into the square second-stage furnace operating at 1000°C. Here the material fuses into a solid ingot, in a hydrogen atmosphere. This takes about 45 to 60 minutes. After this fusion, boats are pulled into water-cooled section of tube, where they are cooled and removed.

Next step is purification of the ingot in an induction furnace, under a nitrogen atmosphere. The ingot is melted between the coils, and impurities are swept to one end of the bar. This end is then sawed off, leaving the pure bar.

The pure germanium is cut into 100-gram pieces, from which crystals are formed in a crystal-growing induction furnace, under a hydrogen atmosphere. (Furnace is made by Hevi Duty Electric Company, Dept. CP, Milwaukee 1, Wis. . . . or for more information check CP 8569 on form, pgs. 2-3.)

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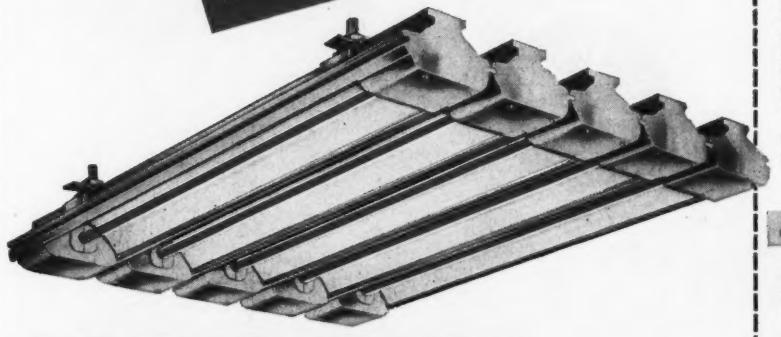

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Uses: For furnishing accurately controlled heat at atmospheric pressure to rolls, mixers, coils, reactors, autoclaves, storage tanks, and various processing equipment.

Features: Several different process temperatures can be accurately maintained from one central system. In other words, if a plant desires to maintain a process temperature of 550°F in rolls, a temperature of 300°F in storage tanks, and perhaps a 400°F temperature in autoclaves in another part of plant,

Heater with output rating of 2,100,000 Btu/hr at hot oil temperature of 600°F, to be installed in a paper plant in California

all of these various temperatures can be accurately controlled from one central hot oil system. In addition, programmed heating or cooling cycles can be effectively maintained with the system.

According to manufacturer, this is the first equipment ever offered to the market as a complete heat generating system which actually does automatically heat and transport to processes a standard type of heat transfer oil in a safe and economical manner.

Description: The Hot Oil Heater is a steel-built (non-pressure) heat generator through which a mineral heat transfer oil flows at atmospheric pressure and is circulated to equipment in plant. It consists of an all-steel heat exchanger, an expansion-seal tank, valves, circulators, fuel burner (oil, gas, or combination), and controls.

Units are available covering a wide range of heat requirements, varying from 1,500,000 up to 10,000,000 Btu/hr or more. Smallest sizes are shipped to plants ready for insulation and connection to service and utility lines. Larger units are shipped in completed sections, ready for rapid erection. Smaller units, covering a range of approximately 3000 to 300,000 Btu/hr, are expected to be available in the near future.

One important factor in the design of the equipment is the elimination of oxidation of the oil. Concentrated heat on the transfer oil is completely avoided

When inquiring check CP 8571 on handy form, pgs. 2-3

in the system. The only place where the oil is exposed to air is in the top tank, which is designated as a cold oil seal and expansion tank. Oil in this tank is maintained at a temperature 300 to 400°F below application temperature of the heat transfer oil in main heat generator. Since this is well below oxidation temperature of oil, result is that life of the oil in system is measured in terms of years.

Low temperatures maintained in cold oil seal tank are kept low when burner is operating at full heat regardless of whether or not oil is being circulated to process. This means that in the event of a power failure or an interruption in processing, oil is still not in danger of being broken down. Draining facilities are not needed to protect the oil or the system.

Rust is not a problem since medium is always a liquid. This also means that all heat is sensible heat and process temperature control can be maintained very accurately. No chemical treatment is needed and no heat losses occur due to condensation lines or traps.

Other advantages of equipment include the safety of the system. Since no open fires are required, hazards from this source are minimized. Design and method of operation reduces danger of an explosion to a minimum. According to manufacturer unit will provide trouble-free service and requires little operating labor.

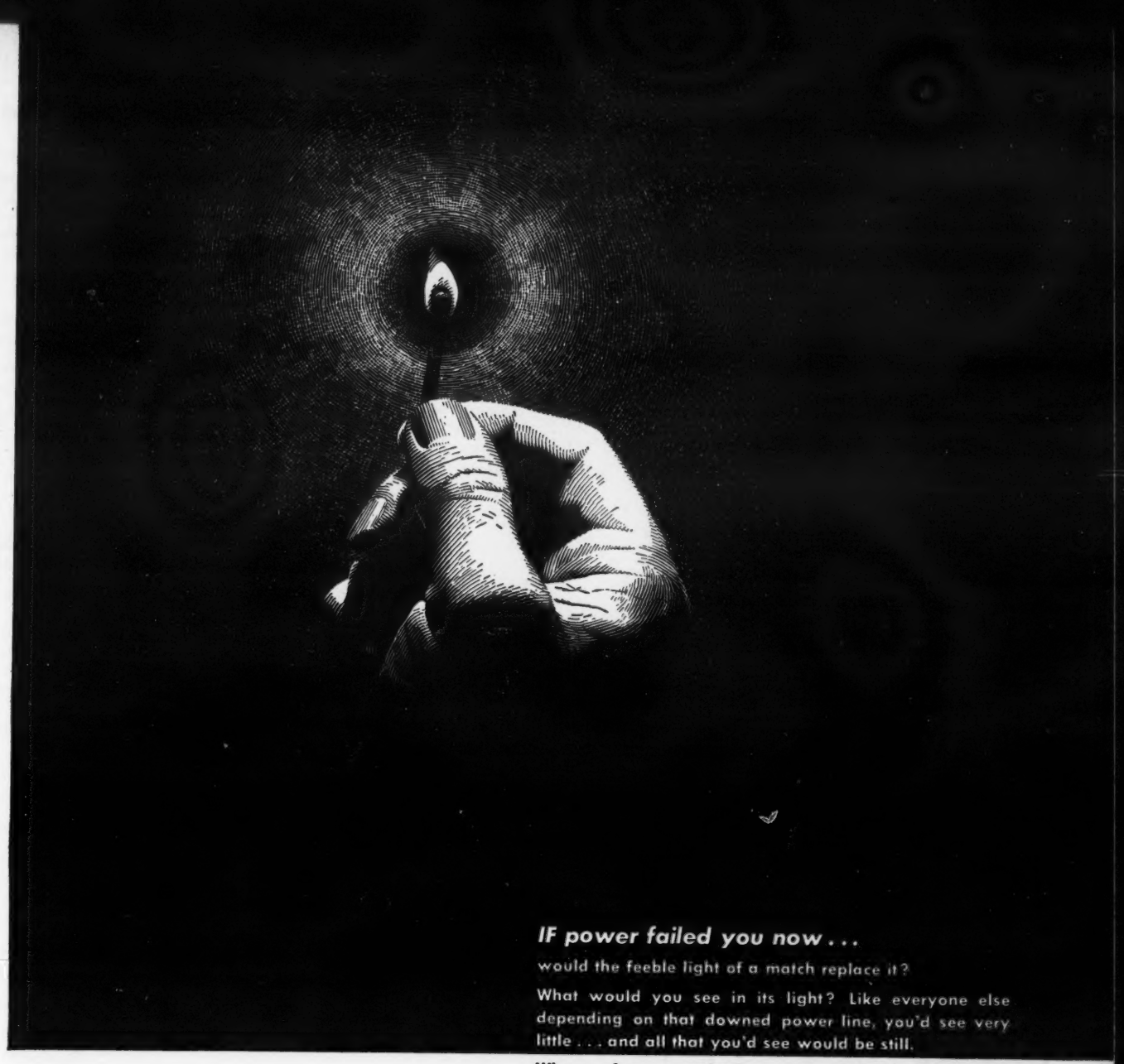
(Product of The Hot Oil Heater Co., Inc., Dept. CP, 246 Walnut St., Newtonville 60, Mass. . . . or for more information check CP 8572 on pages 2 and 3.)

Illustrates features of drill presses

Twelve-page catalog, illustrated with both photos and line drawings, shows specifications and features of drill presses. Catalog also discusses production-boosting drill press attachments.

Cat 5206 is issued by South Bend Lathe Works, Dept. CP, 425 E. Madison St., South Bend 22, Ind. When inquiring specify CP 8573, pages 2 and 3.

For more information on product at right, specify CP 8574 . . . see information request blank between pages 2 and 3.



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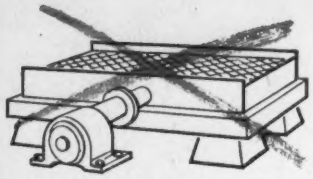

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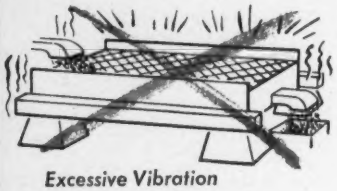

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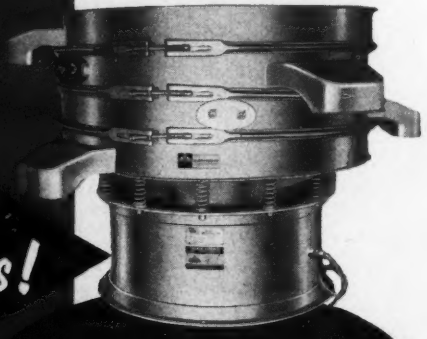

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Briefs · · · from contemporary publications

Here's a quick look at interesting articles appearing in other publications, . . . as selected by Technical Editorial Director, Harry McCormack

Beta-ray gaging in the rubber industry

Authors call attention to the importance of holding close tolerances in calendering rubber to specific thickness or to coating in the same way. Function of the beta-ray gage in attaining these objectives is discussed and the gage is described with its use. Gage continuously measures weight of moving strip material and for this reason finds many applications in the fields of rubber, plastics, paper, abrasives, ferrous and non-ferrous metals. 3 pages, 7 figures. (*"Rubber Age," December* 1952, *page* 350)

Inspection and measurement by ultrasonics

Article discusses the application of ultrasonics for the inspection of forgings, castings, weldments and pipe. Necessary equipment and its use is stated. 2 pages, 10 figures. (*"Instruments," December* 1952, *page* 1720)

High vacuum concentration in chemical processing

Paper discusses various characteristics of the falling film evaporator when operated in the range of 10 mm pressure absolute. Flow diagram with heat balance, unit-to-unit, is included. Corrosion, as related to temperature and velocity, is discussed. Some applications are presented and commented on. 5 pages, 6 figures. (*"Chemical Engineering Progress," December* 1952, *page* 589)

Mass spectra of fluorocarbons

Paper presents the mass spectra of 22 fluorocarbons as measured on a 180° consolidated mass spectrometer. Results are presented in six tables of spectral data. 4½ pages, 6 tables. (*"Journal of Research NBS," November* 1952, *page* 343)

Sodium trichloroacetate inhibition

Authors discuss methods which may be used to protect tanks cars in which this particular weed killer solution is shipped. Present two tables of laboratory corrosion test data. 3 pages, 2 tables. (*"Corrosion," December* 1952, *page* 410)

Effect of high-energy cathode rays on cellulose

Paper states methods used in irradiating celluloses of different origin. Irradiation technique described. Results in carbohydrate decomposition are stated. 3 pages, 5 figures, 2 tables. (*"Industrial and Engineering Chemistry," December* 1952, *page* 2848)

Efflorescence problems on outside walls

Authors have presented this problem as related to exterior walls. Discusses source of efflorescing compounds. Comments on the role of water in the action, solubility and efflorescence, crystal growth and disintegration. Photos show many examples of damage from efflorescing compounds present either in the mortars or in the building materials used. 6½ pages, 18 figures, 1 table. (*"A. S. T. M. Bulletin," October* 1952, *page* 39)

Waste sulfite liquor treatment

Article describes the plant recently constructed and put in operation, whereby the sulfite liquor from a large paper pulping operation is concentrated and processed for recovery of by-products. No operating details. 3 pages, flow diagram, 5 photos. (*"The Paper Industry," December* 1952, *page* 1074)

Regional markets for chemicals

Author states methods used in compiling data. Tabulates chemicals used in industry and consumption of chemicals by consuming industries and by locality. States dollar value of products. Includes 3 pages of tabulated information on production of chemical consuming industries and commodities in each state. 6 pages, 4 tables. (*"Chemical Engineering Progress," November* 1952, *page* 578)

Materials of construction report

Summarizes information which has a bearing on this topic. Slanted particularly towards those materials, either as materials of construction or as protective coatings which resist or protect from corrosion. Section emphasizes importance of

regular inspection and maintenance on all protective coatings. States how this should be done, lists names and locations of producers of various protective coatings. Contains a directory of materials, their sources, descriptions and most important applications. (Much of this information repeated from earlier years.) 46 pages, many illustrations, tables and diagrams. (*"Chemical Engineering," December* 1952, *page* 144)

Effect of aeration on citric acid production

Paper tells the results of an experimental study of citric acid production in 50-gallon fermenters. Fermentation charges are tabulated. 10 fermentations made using varied amounts of air and varied agitator speeds. Precautions taken to secure freedom of charge from elements interfering with fermentations are stated. Results of 10 fermentations are tabulated. 2 pages, 3 figures, 2 tables. (*"Industrial and Engineering Chemistry," December* 1952, *page* 2945)

Action of ozone on water tastes, odors, coliform organisms

Authors present the results of an experimental study on the application of ozone in purifying a river water. Describe river's drainage basin with comments on the water-borne material at different seasons. Pilot plant used is described and operating procedures stated. Results are tabulated for three different methods of treating water. 7 pages, 3 tables. (*"Journal of American Water Works Association," December* 1952, *page* 1144)

Urea complexes in purifying fatty acids, esters, alcohols

Article deals with the application of this technique in the isolation of oleic acid and methyl oleate from olive oil. The so-called "solution" and the "slurry" methods were used on separate samples to compare the workability of each method. Complete description of techniques given, including treatment of each complex to liberate the desired product. Purity and yields of products stated. 2 pages. (*"Journal of American Oil Chemists Society," December* 1952, *page* 614)

Microbiological corrosion of buried steel pipe

Paper reports results of a study of corrosion of buried steel pipe in New York City. Initial field study showed most severe corrosion in poorly aerated soils containing organic material. A detailed investigation of bacterial action in underground corrosion followed. Population counts

(*Continued on next page*)

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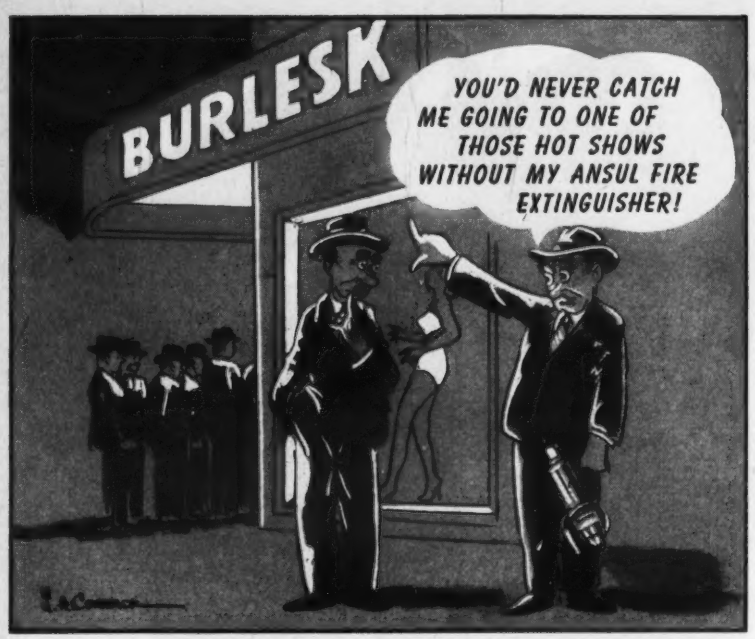

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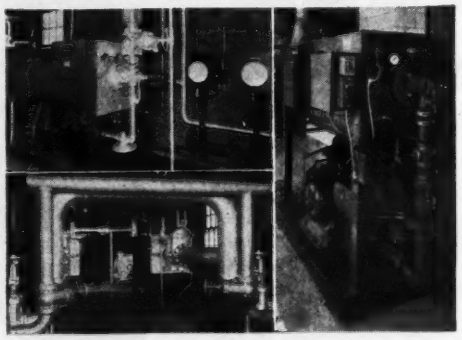

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BRIEFS

(Continued from preceding page)

of five types of anaerobic and aerobic bacteria were made at locations of corrosion. Moisture content, organic material content, soil pH, and presence of sulfide were also determined. Opinions stated as to the mechanism of microbiological corrosion. 8 pages, 6 figures, 6 tables. (*"Corrosion," January* 1953, *page* 11)

How processes affect control

Paper discusses those process factors which affect automatic control. Items commented on: variables to be controlled, presence or absence of self-regulation, process lags or lag combinations which assist or oppose control. 6 pages, 10 figures. (*"Chemical Engineering" December* 1952, *p* 191)

Vitreous enameled chemical paint

Paper presents results of some research on the causes for failure in some enamel coatings even prior to use of equipment. Composition and structure of coatings discussed as background material. Types of defects presented under two headings: defects inherent in the enamel and those resulting from mechanical damage. Many photomicrographs show some of the customary defects originating in improper enameling. 13 pages, 20 figures. (*"Transactions of the Institution of Chemical Engineers, London, Vol* 28," *page* 97)

Evaluating paint bonding materials

Authors present results of an experimental study on the bonding properties of a specific enamel when the steel had undergone phosphate treatments. A gilsonite coating was used in other tests. All treatment methods are described and testing methods are stated. 10 pages, 17 figures, 3 tables. (*"Paint and Varnish Production," December* 1952, *page* 18)

Determination of individual alkyl-aromatic hydrocarbons

Analytical methods were devised to further the study of certain petroleum distillates with respect to their content of aromatics as chemical raw materials. Study included group members up to C10. 8 pages, 9 tables, 2 figures. (*"Analytical Chemistry," December* 1952, *page* 1911)

How to estimate costs in a hurry

Article tabulates various items to be considered in making a cost estimate. Tabulated data: investments and turnover ratios for complete new plants, variable turnover ratio for different types

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of business, elements of working capital, net working capital ratios for various companies, cost distribution as percentage of manufacturing cost, current depreciation allowance in various chemical companies, federal income tax rates paid by various chemical companies. A few examples show how tabulated data can be used in compiling cost data sheet. 5 pages, 8 tables. (*"Chemical Engineering," January* 1953, *page* 168)

Chemical engineering materials of construction

Annual review includes: aluminum alloys, cements, ceramics, elastomers, fibers, nickel and nickel-base alloys, plastics, hard rubber, stainless steels and other ferrous alloys, tin and its alloys. Eight pages of tabulated data on the properties and characteristics of the various materials included in the review. 92 pages, many photos and lists of references. (*"Industrial and Engineering Chemistry," October* 1952, *page* 2289)

Special treatment for industrial wastes at a city plant

This heading is for an article describing how a village studied and developed a suitable plan for treating wool scouring wastes so that they can be satisfactorily treated along with the domestic sewage. Treatment plan is fully described. 4 pages, 1 table, 3 figures. (*"Public Works," November* 1952, *page* 54)

How much for good instrumentation?

Author utilizes many of the processes in a petroleum refinery to illustrate discussion. Emphasizes costs for complete modernization. Cites examples of what will not do; so should be replaced. Discusses water metering, liquid level control, pressure control, and product quality measurement. 4 pages, 5 figures. (*"Petroleum Refiner," December* 1952, *page* 126)

Acetophenone

Article contains the customary historical background covering processes up to the one here described. Process is one consisting of four continuous steps, ending with styrene but with acetophenone as a product of the second step. Equipment and operating data tabulated for production of acetophenone and its purification. Flow diagrams tell this story graphically. Details on equipment are given where they are specific for these processes. Instrument controls are stated, including what they control. Specifications for the product are stated. 13 pages, 11 photos, 6 figures, 4 tables. (*"Industrial and Engineering Chemistry," January* 1953, *page* 2)

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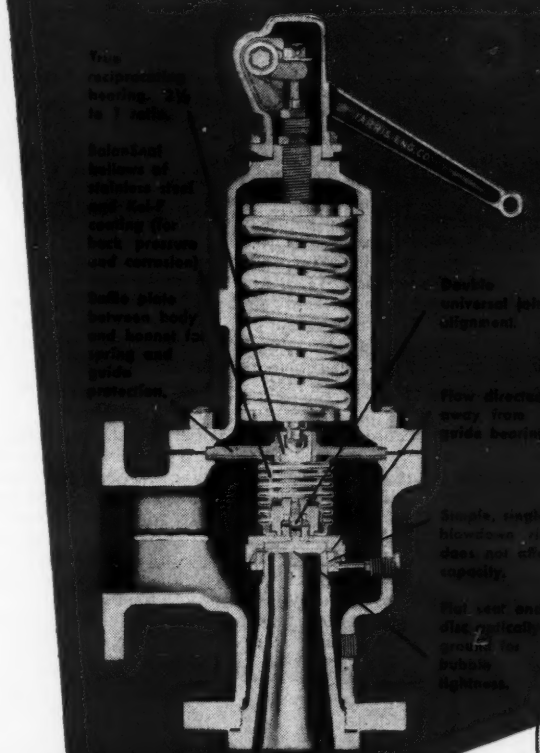

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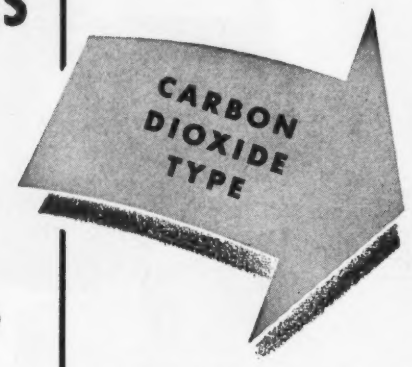
● Top quality backed by experienced engineering results in operating superiority at all times with the world famous C-O-TWO Squeez-Grip Carbon Dioxide Type Fire Extinguishers as well as the newer C-O-TWO Dry Chemical Type Fire Extinguishers. Furthermore, modern manufacturing facilities and extensive field testing, together with approvals such as the Underwriters' Laboratories, Inc., Factory Mutual Laboratories and Government Bureaus assure you of fast, positive action the instant fire strikes.



With C-O-TWO Squeez-Grip Carbon Dioxide Type Fire Extinguishers the penetrating carbon dioxide is a clean, dry, non-damaging, non-conducting inert gas . . . smothers fire in seconds, leaves no after fire mess . . . highly effective on flammable liquid and electrical fires, as well as some surface fires involving ordinary combustible materials. The C-O-TWO Squeez-Grip Valve is the greatest single contribution to the releasing of carbon dioxide for first aid fire fighting . . . just squeeze lever to open . . . release to close.

Convenient 2½, 5, 10, 15 and 20 pound hand sizes . . . discharge horn non-conducting, shatterproof construction. Also, convenient 50, 75 and 100 pound wheeled sizes . . . available with sturdy, wide-faced wheels either with or without rubber tires, as well as available with or without discharge hose and horn protection cover.

With C-O-TWO Dry Chemical Type Fire Extinguishers the heat-shielding dry chemical is a non-conducting, non-abrasive, non-toxic, finely pulverized powder compound . . . blankets fire instantly . . . exceedingly effective on flammable liquid, gas and electrical fires, as well as surface fires involving ordinary combustible materials. The exclusive inverting design renders constant free flowing dry chemical, assuring faster, more effective and complete discharge.

Convenient 4, 20 and 30 pound hand sizes . . . no syphon tubes or valves within the cylinder to become clogged or inoperative . . . discharge hose and squeeze type discharge nozzle remain empty until actuation takes place . . . one piece removable top assembly. Also, convenient 150 pound wheeled size . . . sturdy, wide-faced wheels . . . discharge hose and two position discharge nozzle having soft or solid stream fully enclosed in protection casing . . . footrail and dual bar handle provide easy inverting.

Act now for complete free information on these fast, positive fire extinguishers. Remember fire doesn't wait . . . get the facts today!

C-O-TWO

MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

Squeez-Grip Carbon Dioxide Type Fire Extinguishers
Dry Chemical Type Fire Extinguishers
Built-In High Pressure and Low Pressure Carbon Dioxide Type Fire Extinguishing Systems
Built-In Smoke and Heat Fire Detecting Systems

C-O-TWO FIRE EQUIPMENT COMPANY
NEWARK 1 • NEW JERSEY

C-O-TWO FIRE EQUIPMENT OF CANADA, LTD. • TORONTO 8 • ONTARIO

Sales and Service in the Principal Cities of United States and Canada

AFFILIATED WITH PYRENE MANUFACTURING COMPANY

When inquiring check CP 8581 on handy form, pgs. 2-3

safety

Blast During Nitration Step Shows Value of Explosion Venting

Repairs and alterations made in two weeks at comparatively small cost to building damaged by explosion in batch process

A RECENT explosion in a New Jersey chemical plant again proved the value of providing adequate explosion venting for buildings housing potentially dangerous operations. The process involved nitration on a batch basis and had been in operation for several years. Following the standard practice of charging nitric acid to a receiver prior to the nitration, an explosion occurred and blew out the entire weak side of a detached building where the reaction was being performed. Parts of the Transite wall were found 168 feet away, but no one was injured. Except for the equipment directly involved, there was a minimum of damage to the installation.

Entire rear wall of the building, which faced a wooded area, was made of corrugated Transite except for the doors and windows. The Transite was lightly held to 2 x 4″ framing and provided an explosion venting ratio of 1 sq ft to 18 cu ft of building volume. For personnel protection the reaction was remotely controlled from behind a ⅜″ steel wall which sustained the explosion without any significant damage.

Cause

Cause of the explosion has not been definitely determined, but it was believed due to acetic anhydride and fuming nitric acid forming an explosive compound — possibly in the vapor phase. There are reports of these materials combining to form acetyl nitrate, tetranitromethane, and certain other explosive materials.

The accident occurred while the operator was charging nitric acid from a drum in an adjoining pump room to a 25 gal stainless steel receiver above the reactor. Vacuum supplied by a steam jet was being used to transfer the nitric acid. Since the same vacuum source was employed for charging the acetic anhydride, it is possible that some of this material could have entered the nitric acid lines and holding tank.

Without the secondary safety measure provided, the explosion could undoubtedly have caused serious injury and large monetary loss in damages to the installation. As it was, repairs and alterations were made in two weeks at comparatively small cost. This indicates that building safety into potentially dangerous operations is good business.

Gives off audible warning signal as radiation dosage tolerance is reached . . .

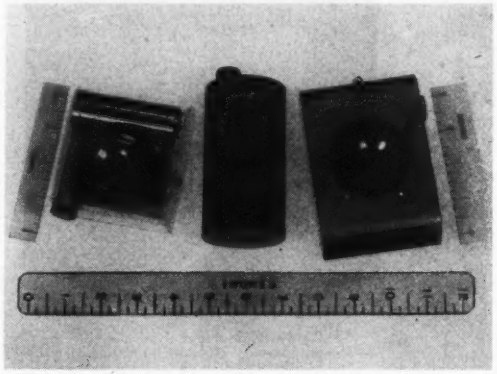
variable detector can be set to go off anywhere between 20 and 200 milliroentgens

Uses: Radiation-detection device for personnel.

Features: After tolerance level is reached, unit is easily re-set by means of ordinary pencil inserted into small hole provided for this purpose. Plastic-case model of detector weighs only 216 grams.

Description: Constitutent parts of R-Vox are an "A" battery, which will last two weeks on an eight-hour shift; a "B" battery, good for shelf life; a triggered audio oscillator and small speaker; and an ion chamber. Detector is variable and can be set to go off anywhere between a 20 and 200 mr range.

The audio alarm starts out at a low frequency when the tolerance level is reached and continues to a high



Three models of radiation-detection device are pictured. Encased in plastic, model on left weighs 216 grams. Center model is somewhat heavier but is the same electronically as the other two. Model on right is enclosed in metal and has the same working parts as shown in the plastic model

frequency, where it levels off. It is possible to check the integrated dose at any time without destroying the information stored in the ion chamber.

At present, this detection device is not available commercially; but may be soon.

(Cooperating in this development were Floyd Glass and Hugh Wilson, development engineers in the Instrument Dept. of Oak Ridge National Laboratory, operated by Carbide and Carbon Chemicals Co., a Division of Union Carbide and Carbon Corp., Oak Ridge, Tenn.)

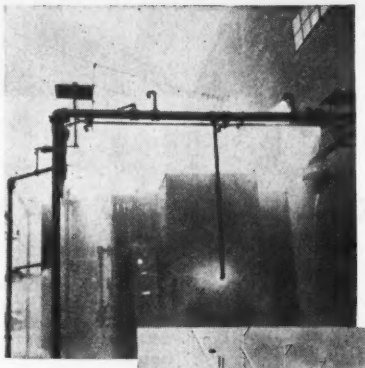
No need to search high and wide . . .

for more information on something you read in these editorial articles. A letter to the company listed at the end of the article . . . or a mark on the Reader Service slip . . . will bring you what you want. This idea originated with CHEMICAL PROCESSING many years ago to help busy men like you!

THE EDITORS

Licked before they start!

BLAW-KNOX FOG SYSTEMS DON'T GIVE FIRES A CHANCE TO GROW UP

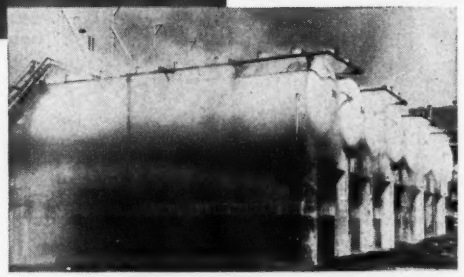


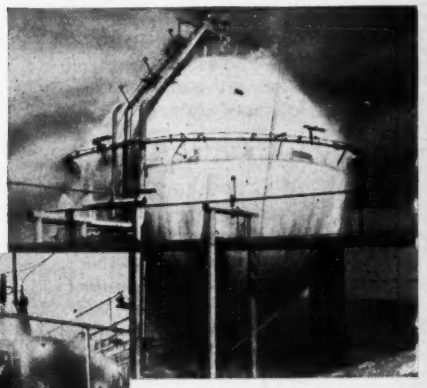
Chemical and petroleum fires strike fast with little or no warning. But not so fast that a Blaw-Knox Fog System actuated by rate-of-rise thermostats can't knock 'em out with a smothering blanket of fog *before* they really get started.

A Blaw-Knox System engineered for the fire hazards existing in or around your plant is a most effective weapon against fire's toll. On the job 24 hours a day, it protects your property as well as products essential to our national economy.

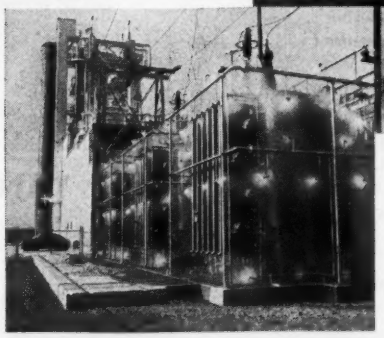
Glad to consult with you and submit an estimate without obligation.

BLAW-KNOX COMPANY
AUTOMATIC SPRINKLER DEPARTMENT
Pittsburgh 33, Pa.





Deluge Systems, Wet Pipe Systems, Dry Pipe Systems, Water Spray and Fog Systems, Rate-of-Rise Sprinkler Systems, and Foam and Carbon Dioxide Extinguisher Systems.



"LITTLE JOEY SPRINKLER"
Always on the Job

BLAW-KNOX AUTOMATIC FIRE PROTECTION SYSTEMS

When inquiring check CP 8582 on handy form, pgs. 2-3

Fluid extinguishing agent assures non-clogging, free discharge . . .

unit features flat, wide-mouthed dispersion nozzle

Uses: Recommended for oil, gasoline, grease, paint, etc, and all electrical fires.

Features: Extinguishing agent has the consistency of a highly refined powder, flows freely, and will not cake. It is stated to be entirely moisture-free and moisture-resistant, and is non-conductive.

Non-clogging operation of the extinguisher is further assured through the use of moisture-free nitrogen, and manufacturer's specially designed, flat, wide-mouthed dispersion nozzle.

Description: Redi-Flo is a nitrogen-pressurized chemical fire extinguisher with a discharge time ranging from 8 to 14 sec. Redi-Flo comes in four different sizes: 3, 5, 10 and 20 lb. Operating temperature range is from 40 to 120°F. Nitrogen expellant is packed under 200 lb pressure, and Teflon gaskets are used to insure positive, leakproof seal.

Discharge distances vary as follows: 3-lb unit — 5 to 10′; 5-lb unit — 10 to 20′; 10-lb unit — 10 to 25′; and 20-lb unit — 10 to 30′. One-hand operation of unit is made possible by extinguisher's light weight, a one-hand squeeze grip, and a trigger release valve (mounted above the grip) which may be cocked open with a flick of the thumb.

Dri-Kem, whose features are reviewed above, is reported to have extinguishing power at least 6% higher, by volume, than that of comparable extinguishing agents. Although developed for use with Redi-Flo extinguisher, it is also offered separately.

(Redi-Flo and Dri-Kem are products of Stop-Fire, Inc., Dept. CP, 125 Ashland Pl., Brooklyn, N. Y. . . . or for more information check CP 8583 on handy form, pages 2 and 3.)

Introduces lasting algaecide

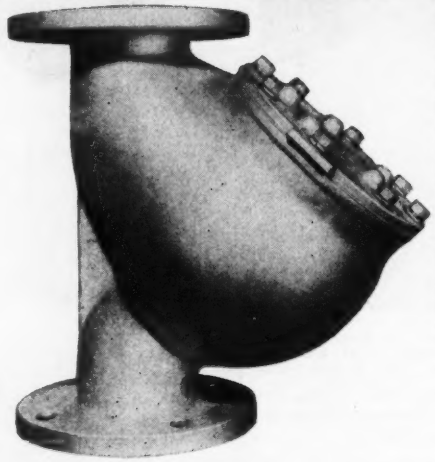
Two-color, four-page brochure discusses how to treat public and private swimming pools to prevent algae, scum, slime, and

VAPOR

with

VENTS FOR STORAGE TANKS

Inside building vents with removable grid flame arresters approved by Underwriters Laboratories, Inc., for use within buildings. May be placed in vent lines near or over a process kettle, storage tank or at any location with easy access for inspection and cleaning. Standard construction is all aluminum with cast aluminum housing and aluminum baffles or grids. Also available with aluminum housing and stainless steel grids or cast iron housing with stainless steel grids. Light in weight; easy to inspect and clean; afford more positive protection in colder months because no freezing of condensate or grid structures.

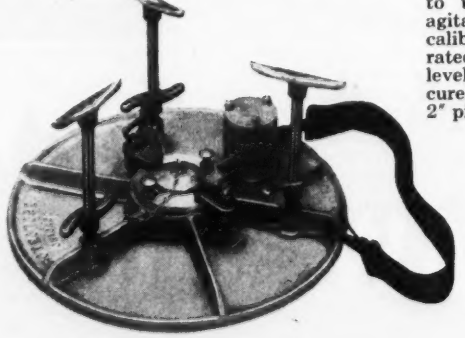


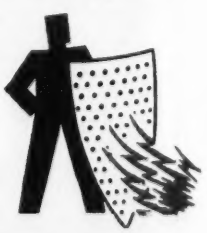
SAFETY CANS. Double concentric fire baffle located inside base of spout. Spring loaded cap mounted on ball and socket joint automatically makes tight, even closure; provides pressure relief. Wide, oval squeeze grip handle for controlled pouring. Sturdy seam-welded, reinforced steel body.

SELF-CLOSING AUTOMATIC FAUCET. Perforated brass flame arrester placed within body at outlet. Provides best protection and is easily removed for cleaning. Valve is outside body where valve seat is not distorted by excessive pressure. Supplied standard with Buna N, Neoprene or Thiokol gaskets; other gasket materials available upon request.

TANK CAR LOADERS and UNLOADERS

Compact, durable, easily handled units which fit all tank car dome openings. Three screw lugs attach adapter securely to tank car dome. With center cap removed, fill pipe is inserted to extend close to tank bottom for minimum agitation and vapor loss. A calibrated float rod is incorporated to indicate tank car liquid level. Syphon unloading is secured by substituting a standard 2″ pipe in center opening.





DRUM BUNG FITTING. A combination fill and vent inserted into bung opening which provides vacuum and automatic pressure relief and guards against explosion under fire conditions. Double perforated metal fire baffle extends into drum and permits refilling without danger of interior fire.

THE PROTECTOSEAL COMPANY

1920 South Western Avenue, Chicago 8 • *In Canada: Safety Supply Co., Toronto*

EXPLOSIONS *Can be prevented*

PROTECTOSEAL

APPROVED

Safety Equipment

Protects against explosion and fire **Seals** against loss by evaporation
Prevents waste in handling **Speeds** production

A COMPLETE LINE FOR THE SAFE STORAGE, TRANSFER AND USE OF FLAMMABLES IN ALL PROCESSES AND ALL INDUSTRY

SUPPLY CANS. Double perforated-metal fire baffles at filling closure and base of flexible pouring spout. Dispensing valve located at base of spout conveniently operated at handle; gives positive control when pouring. Factory tested, seam-welded "unit" construction body.

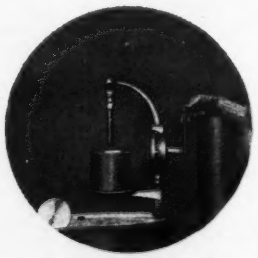
LABORATORY CANS WITH TILT FRAME. An extra safe and convenient dispenser for accurate, dripless pouring. Easily tilted; returns to upright when released. Faucet and filler openings have perforated-metal fire baffles and self-closing, spring action closures.

LABORATORY CANS WITH BOTTOM FAUCET. Has same features and sturdy, seam-welded construction as tilt can and equipped with perforated-metal fire baffles at faucet and filler openings. Openings have self-closing, spring action closures. Shock rim at bottom elevates faucet for convenient use.

OILY WASTE CANS. Tight, seam-welded body with snug-fitting cover which closes automatically to smother fire. Cover opens wide with slight foot pressure on full width treadle; provides large opening for placing or removing soaked materials.

LABORATORY DISPOSAL CANS. Available in stainless steel or heavy terne plate. Wide 3⅝" inside diameter spout permits easy use without a funnel; perforated-metal flame arrester at base of spout; self-closing cap with ball and socket for tight, uniform sealing; permits pressure relief.

LABORATORY SHELF CANS. New space-saving oval shape makes for greater ease in handling; permits four cans in space formerly required for three. Double-wall perforated fire baffle in spout; self-closing cap with ball and socket joint seals against evaporation, provides pressure relief.



TRANSFER PUMP. Provides complete protection against explosion and fire hazards in transferring flammable liquids. Three flame arresters: at spout, above bung adapter and at strainer inlet within drum. Light-weight aluminum alloy.

Ask for the Free Catalog and Service Material that Will Serve You Best.

The Protectoseal Company
1920 S. Western Ave.,
Chicago 8, Ill.

Please send the information checked below:

____Catalog of Safety Cans.

____Catalog of Safety Equipment for Bulk Storage.

____December, 1952 issue of Safety Bulletin with article on Vapor Explosions.

Name_____

Title_____

Company_____

Address_____

City_____Zone____ State_____

odor. Treating chemical is based on colloidal silver compound introduced to the U S last fall. Residual effects are said to last so long that pools need not be shut down for cleaning for a whole swimming season. "Algaedyn" is issued by U. S. Movidyn Corporation, Dept. CP, 863 N. Orleans St., Chicago 10, Ill. When inquiring specify CP 8584 on pgs. 2-3.

Strong and durable welding hat is lightweight . . .

one piece seamless shell is resistant to warping

Uses: Welding helmet.

Features: Exceptionally strong and durable but very light in weight. Material of construction, glass-fiber, is highly resilient and will not split, crack or deform.

Description: Saf-I-Weld welding helmet has a patented position hinge which locks helmet in "raised" or "working position" and is adjustable to fit any head size. One piece seamless shell is resistant to warping from heat or moisture and meets ASA code for electrical conductivity and strength. Helmet is available in a light green color.

(Manufactured by U.S. Safety Service Co., Dept. CP, 1215 McGee St., Kansas City, Mo. . . . or for more data check CP 8585, pgs. 2 & 3.)

How to minimize hazards when handling bromine

Informative booklet sets forth safety measures to be employed and regulations to be followed in handling, storing, shipping and disposing of bromine. First aid measures and medical procedures are also included. General topics include properties, usual shipping containers, unloading and emptying containers, storage, handling, waste disposal, and health hazards and their control.

To obtain Data Sheet SD-49 remit 25 cents direct to Manufacturing Chemists' Association, Inc., 246 Woodward Bldg., 15th & H Sts., N.W., Washington 5, D. C.

For more information on product at left, specify CP 8586 . . . see information request blank between pages 2 - 3.

Flashes on and off in illuminating messages . . .

can call attention to safety posters and slogans

Uses: To illuminate safety posters, warnings of hazardous conditions, plant notices, departmental messages, special instructions, directional signs, safety records — frequency and severity charts, fire prevention notices, company slogans, etc.

Features: Messages are quickly changed by disengaging front retainer and sliding glass panels out of grooved edge. Unit has keyhole slots for attaching to wall or other location.

Description: Ipco Beacon Flashing Bulletin Board flashes approximately 15 times a minute. It carries two separate messages that may be read from a wide angle. Unit accommodates posters and sheets up to 8-½ x 11-½" and operates on a 40w bulb and flashing unit.

Overall size of the unit is: 14-½" wide, 8" deep, and 12-¼" high. It is finished in green enamel and is furnished with 6' of rubber cord and plug.

(Announced by Industrial Products Co., Dept. CP, 2963 N. Fourth St., Philadelphia 33, Pa. . . . or for more information check CP 8588 on handy form, pages 2 and 3.)

Offer locator decals for various types of extinguishers . . .

allows spotting and identification of unit in an emergency

Uses: To help locate the proper extinguisher to be used in case of fire.

Features: Sharp contrast of color and design of decals helps prevent confusion due to possible color blindness.

Description: Decal transfer sets consist of a 1-¾ x 2" size for application to the extinguisher, and a 9 x 8" size for placing high on the wall or some nearby object above the extinguisher.

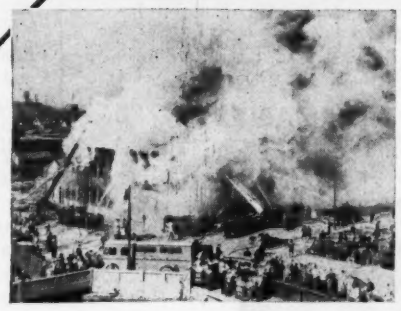
Three different sets are available according to the type fire for which the extinguisher is suitable: Class A, Class B & C, and Class A & B fires.

(Available from The Meyercord

"Automatic" Sprinkler

10 point FIRE PROTECTION

spells the difference between



PROFIT and LOSS!

This scene of a chemical plant going up in smoke and flames is repeated scores of times daily throughout the country. Newspapers referred to this one as a "half million dollar blaze." But, they were only talking about the building and its contents. They didn't refer to losses in terms of out-of-service time, lost customers, inflated costs of rebuilding, destroyed records, vanishing profits. No, those losses are intangible—yet, just as real, just as eminent as the physical cost of fire destruction.

"Automatic" Sprinkler 10 Point Fire Protection is an absolute safeguard against fire loss, tangible and intangible. It's a profit making service that saves you money whether you have a fire or not . . . saves your business if you do!

Get The Facts: Write for informative 36-page booklet, "The ABC of Fire Protection." It's free!

"Automatic" Sprinkler

CORPORATION OF AMERICA • YOUNGSTOWN, OHIO

OFFICES IN PRINCIPAL CITIES OF NORTH AND SOUTH AMERICA

When inquiring check CP 8587 on handy form, pgs. 2-3

Production Goes Up

Costs Come Down

when you order Stanzoils®

by PIONEER

Proper protection and comfortable fit go hand in glove with Stanzoils to boost your workers' efficiency and send your company's profits soaring! Work stoppage and injury claims decrease . . . medical expenses decline . . . employee relations improve and production increases—when you order the *right* liquid tight acid and oil resistant neoprene Stanzoil gloves for *each* job.

Choice of 32 longer-lasting styles, weights, sizes, colors . . . write for PIONEER Stanzoil catalog today.

N-32 medium weight straight finger style neoprene glove. Non-slip grip surface. 10½" length.

Industrial Products Division

The PIONEER Rubber Company

241 TIFFIN ROAD • WILLARD, OHIO

STANZOIL PIONEER

Quality Gloves for 35 Years

When inquiring check CP 8589 on handy form, pgs. 2-3

NOT JUST "MOISTURE PROOF" LIGHTING, BUT . . .
. . . ACTUALLY VAPOR TIGHT LIGHTING UNITS
TO KEEP OUT corrosive fumes, vapors, smoke, dust, as well as moisture
Dome Reflector
Shallow Dome
Symmetrical Angle

● Benjamin "Vapolets" are recommended for all locations exposed to moisture and non-combustible dust, such as processing areas, loading docks, power plants, R.R. shops, cold storage plants, etc. Listed "Vapor-Proof" by UL.

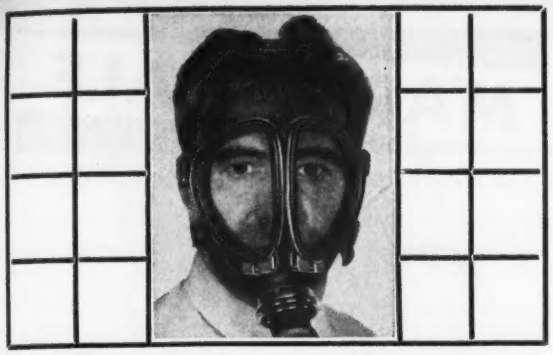
Sealed lamp and wiring chambers; rugged aluminum guards; porcelain enameled steel reflectors (optional) assure long life without breakdown or frequent service.

FREE DATA BULLETIN
Benjamin Electric Mfg. Co.,
Dept. LL, Des Plaines, Ill.

BENJAMIN "VAPOLETS"

6130

When inquiring check CP 8590 on handy form, pgs. 2-3



ACME . the Only Gas Mask With the "PICTURE WINDOWS"

You never have that "jammed-in" feeling, wearing the Acme Full-Vision Gas Mask. Its patented, larger lenses are like picture windows, giving you full natural vision for that safe, unconfined feeling. When you walk, you can actually see your toes without bobbing your head. This factor alone makes Acme outstanding among gas masks . . . well worth looking into.

Write for the complete story on Acme Gas Masks for the chemical industry.

ACME PROTECTION EQUIPMENT CO.
3037 West Lake Street, Chicago 12, Illinois

When inquiring check CP 8591 on handy form, pgs. 2-3

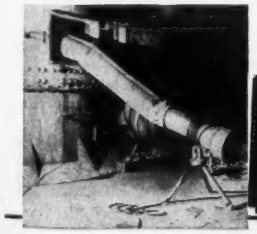
Drive out
FOUL AIR
Blow in
FRESH AIR
with Coppus Type A Ventilator

Assure greater safety, comfort for workers . . . get greater efficiency.

Drive out dangerous fumes, gases, stagnant or hot air from boilers, cable manholes, tanks, vats and other confined places. *Supply fresh air continuously.*

Send now for further information. Coppus Engineering Corporation, 383 Park Avenue, Worcester 2, Mass.

MANHOLES made safe for workers' entrance within minutes.



BOILER AND TANK INTERIORS cooled by Coppus. Fresh air supplied continuously.

ANOTHER **COPPUS** "BLUE RIBBON" PRODUCT

When inquiring check CP 8592 on handy form, pgs. 2-3

Company, Department CP, 5323 West Lake Street, Chicago 44, Illinois . . . or for more information about this product, reader may simply check CP 8593 on handy form, between pages two and three.)

User reports 2-year serviceability on lab coats . . .

synthetic fabric resists acids and chemicals

A Long Island laboratory reports almost two years of continuous wear of garments fabricated from an acrylic fiber.* Before adopting these coats, it is reported that laboratory workers used up an average of eight cotton coats a year. They also state that during this period the garments were never pressed, yet always maintained a "just pressed" look.

In addition to lab coats, material is also fabricated into work shirts, pants and coveralls. Fabric is resistant to oil, grease, paint, dirt, deterioration by sunlight and ultraviolet rays, mildew, moths, and abrasion.

(Manufacturer of clothing is Worklon, Inc., Dept. CP, 253 West 28th St., New York, N. Y. . . . or for more information check CP 8594 on handy form, pages 2 and 3.)

Work gloves can be washed and used repeatedly

Fabricated of thick, twisted loop pile fabric, work gloves can be cleaned and reused, since they don't have to be thrown away when they are dirty.

By cushioning the hands, protecting them against rough surfaces, gloves afford maximum protection. Air cells in fabric insulate against heat and cold.

Heavy and light-duty gloves, as well as other types of gloves for a variety of industrial operations, are illustrated and described in 10-page catalog.

"Jomac Work Gloves" is issued by C. Walker Jones Company, Department CP, 6135 North Lambert Street, Philadelphia 38, Pennsylvania. When inquiring about this development simply specify CP 8595 on handy Reader Service slip between pages 2 and 3.

In a Fire Emergency...

ALL HANDS ARE "SKILLED HANDS"
WITH
ANSUL DRY CHEMICAL FIRE EXTINGUISHING EQUIPMENT

With Ansul Extinguishers near-expert results are obtained by inexperienced operators. In fact, all Ansul Extinguishers are designed to provide a maximum of extinguishing effectiveness in the hands of inexperienced personnel.

This feature, plus benefits listed below, account for the outstanding preference for Ansul Equipment by fire protection men in all phases of American industry.

Send for File No. 801. You will receive a variety of helpful printed matter. Included is our latest catalog which describes Ansul Extinguishers of all sizes — from the small Ansul Model 4 to Ansul Piped Systems and Ansul 2000 lb. Stationary Units.

1. Water-tight construction throughout.
2. Easy on-the-spot Recharging (No tools needed.)
3. Quick, positive puncture operation.
4. Special cartridge guard protects cartridge . . . rugged construction throughout.
5. Ansul *"PLUS-FIFTY"* Dry Chemical used exclusively.
6. Corrosion resistant construction throughout.
7. Greater fire-stopping power.
8. Field tested by thousands of satisfied customers.

OFFICES AND DISTRIBUTORS IN PRINCIPAL CITIES IN THE U. S. A., CANADA AND OTHER COUNTRIES

ANSUL *Chemical Company*
FIRE EQUIPMENT DIVISION • MARINETTE, WISCONSIN

MANUFACTURERS OF DRY CHEMICAL FIRE EXTINGUISHERS, INDUSTRIAL CHEMICALS, SPECIAL CHEMICALS, REFRIGERANTS AND REFRIGERATION PRODUCTS • DISTRIBUTORS OF DU PONT "FREON" REFRIGERANTS

When inquiring check CP 8596 on handy form, pgs. 2-3

Sometimes

"Who Says So?"

is Mighty Important!

PLANNING and engineering fire protection —especially for those key hazards where fire can hit like lightning and with crippling effect—is a job for experienced specialists only. Knowing "who says so" and his qualifications may save you from huge loss.

Fire protection by low pressure carbon dioxide is no exception. And here CARDOX' experience is literally years ahead!

With thousands of installations, *plus* years of creative research concentrated by war and high priority projects—CARDOX' knowledge in the engineering and manufacture of low pressure carbon dioxide fire extinguishing systems is unparalleled. Protecting many of the world's toughest hazards, CARDOX Systems* have saved industry from uncountable losses in dollars and production.

A survey of your hazards by CARDOX puts this experience at your service. It can be of great value to you—and it costs you nothing. Why not write for a CARDOX *survey* now?

**Covered by Patents, Issued and Pending.*

CARDOX

ORIGINATOR OF **LOW PRESSURE CO_2**

FIRE EXTINGUISHING SYSTEMS

CARDOX CORPORATION • BELL BUILDING • CHICAGO 1, ILLINOIS

Offices in Principal Cities

When inquiring check CP 8597 on handy form, pgs. 2-3

Add 2-way phone to facepiece of mask . . .

enables tank workers to advise of any hazard

Uses: Allows workers in tanks to advise the outside if: more air is needed, hose leading to surface becomes fouled on an obstruction, or any unusual hazard exists.

Features: Increases efficiency as men are able to report conditions or make orders for equipment without having to return to surface; and conversely, they are able to receive instructions while on the job.

Description: Maskfone is a mask which incorporates two-way telephone communication. A Neoprene-covered cable connects the mask transmitter with a conventional hand-held phone on the outside of a tank.

It is reported that no outside source of power is needed for voice transmission, as vibration of the speaker's voice provides the necessary power.

In addition to earphones with head harness, a special speaking diaphragm is incorporated in the mask — which may be of all-service, canister, tank, oxygen generating, or hose type.

(Offered by the Mine Safety Appliances Co., Dept. CP, Braddock, Thomas & Meade St., Pittsburgh 8, Pa. . . . or for more information check CP 8598 on handy form, pages 2 and 3.)

Coat work gloves with reinforced Neoprene . . .

to effect more resistance to cuts, acids, solvents

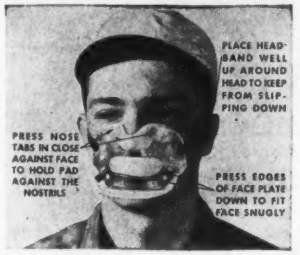
Uses: Gloves for industrial occupations.

Features: Incorporation of improved coating over fabric produces more resistance to cuts, abrasions, grease, acids, caustics, solvents and heat.

Description: Neox coating (reinforced Neoprene) applied to manufacturer's line of fabric work gloves is produced by using special additives with a Neoprene base. Two weights of coating are available to meet a wide range of service requirements. Full range of styles from knit-wrists to 14"

MARTINDALE

PROTECTIVE MASKS


PLACE HEAD-BAND WELL UP AROUND HEAD TO KEEP FROM SLIPPING DOWN
PRESS NOSE TABS IN CLOSE AGAINST FACE TO HOLD PAD AGAINST THE NOSTRILS
PRESS EDGES OF FACE PLATE DOWN TO FIT FACE SNUGLY

Weigh less than ½ ounce
Furnish excellent protection against many non-toxic dusts. Replaceable cotton pads are inexpensive and quickly changed.

Masks	.30 each
No. 1 Refills	.02 each
No. 2 Refills-heavy	.025 each

Quantity Discounts

Less than $10.00 List	Net
$10.00 to $24.99	10%
$25.00 to $99.99	15%
$100.00 or over	20%

Minimum, charge or C.O.D. $2.00
Minimum, Cash with Order $1.00
If payment accompanies order we will pay delivery charges.

RECIPRO-TOOL

Permanently engraves letters, numbers, symbols, etc. on practically any hard or semi-hard material such as glass, ceramics, plastics, stone, wood, iron, brass, aluminum, etc. This powerful tool is ruggedly constructed. Easy to operate. Made for 115 volts, 60 cycle A.C. current only.

With hardened alloy bit $19.50

With diamond tipped bit $22.75

Send for latest catalog of maintenance and production equipment.

MARTINDALE ELECTRIC CO.

1358 HIRD AVE. CLEVELAND 7, OHIO

When inquiring check CP 8599 on handy form, pgs. 2-3

No, we do not make holes for doughnuts.

We are glad for this opportunity to publicize this fact, which we have been asked about so often.

But we do make the round holes and square holes and slots, triangular, indented, burred, lipped, ornamental and many more. We perforate these holes in sheets and plates of metal, plastic, hardboard and even plywood.

For 70 years perforating has been our business; so we invite you to investigate our facilities whenever you have need for perforating services. Those who know, say — if it can be perforated, H. & K. can do it.

Let us send you our Catalog No. 62. It is a handbook of perforated materials, sent gratis.

The Harrington & King Perforating Co

5636 Fillmore St. Chicago 44, Ill.
114 Liberty St. New York 6, N. Y.

When inquiring check CP 8600 on handy form, pgs. 2-3

TRI-LOK safety steps

Each Tri-Lok step consists of a panel of Rectangular, Diagonal, or U-type Tri-Lok flooring in any desired width, length, depth, and bar spacing.

SAFE—checker plate nosing bars make each step stand out clearly. Abrasive edging also available.

CLEAN—clogless, rivetless Tri-Lok joint prevents accumulation of dirt, moisture, rust.

STRONG—added strength provided at maximum load contact by shape and rigidity of nosing bar.

Write today for bulletin PL-1103

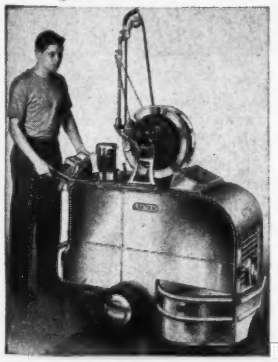
DRAVO CORPORATION
National Distributor for the Tri-Lok Company
Dravo Building, Pittsburgh 22, Pennsylvania
Sales Representatives in Principal Cities

DRAVO

When inquiring check CP 8601 on handy form, pgs. 2-3

EXPLOSION-PROOF!!

These Special LINCOLN Machines will Scrub, Wax and Polish Your Laboratory Floors to Shining Cleanliness with Absolute Safety!!



$AVE UP TO 75% ON FLOOR SCRUBBING!

Let us prove, without cost or obligation, that even in highly combustible atmospheric locations ONE MAN and a LINCOLN Floor Machine can save you up to 75% on your floor maintenance costs.

There is a recommended LINCOLN for every floor cleaning operation. Ask for a FREE Demonstration

The LINCOLN Model 216EP Explosion-Proof Scrubber and Polisher

Above: the Lincoln Model 500 E AUTO SCRUBBER that scrubs, rinses and dries up to 400 sq. ft. per minute. Electrically operated, explosion-proof construction.

Write Dept. 3-53 for details.

Lincoln-Schlueter FLOOR MACHINERY COMPANY
1240 WEST VAN BUREN ST. CHICAGO 7, ILLINOIS

MORE THAN 55 YEARS OF SERVICE

World's Manufacturer of the Most Complete Line of Floor Maintenance Equipment

When inquiring check CP 8602 on handy form, pgs. 2-3

gauntlets are available — fully or palm coated.

(Announced by Edmont Manufacturing Co., Dept. CP, 1204 Walnut St., Coshocton, Ohio . . . or for more information about this development reader may simply check CP 8603 on handy Reader Service slip between pages 2 & 3.)

Gives insight into meaning of lighting specifications

Eight-page, pocket-size booklet explains development and meaning of industrial lighting specifications and use of a particular label to denote adherence to these specifications.

Written in easily-understood question-and-answer format, booklet answers some of the most frequently-asked queries about the group which enforces the specifications, the label which denotes adherence to specifications, and the certification procedure.

"Question and Answers about the RLM Label" is issued by RLM Standards Institute, 326 W. Madison St., Chicago 6, Ill. When inquiring about this development simply specify CP 8604 on handy Reader Service slip pages 2 and 3.

Walk over conveyors instead of around . . .

safety ladder has "draw bridge"; casters which retract

Uses: Provide cross-over areas in the vicinity of conveyor systems or similar obstructions.

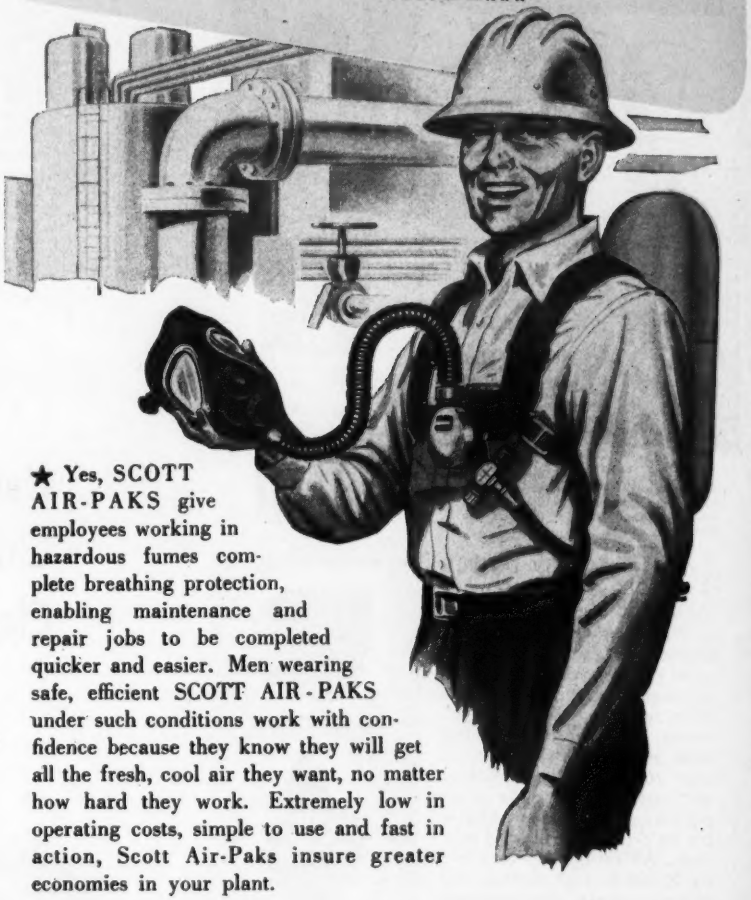
Features: One model of ladder is equipped with casters which automatically retract when a person steps on the ladder, allowing rubber-tipped legs to engage floor.

Description: Ballymore Walk Over Ladder is equipped with a walkway which can be folded up so that the ladder can be used for normal requirements. It is necessary, of course, to combine two of the ladders in assembling the walkway structure. Another model of the ladder has rubber tipped legs only for permanent or semi-permanent installation.

(Supplied by the Ballymore Co., Dept. CP, 139 Pennsylvania Ave., Wayne, Pa. . . . or for more information check CP 8605 on handy Reader Service slip between pages 2 and 3.)

"We all feel safer since our Safety Director SPECIFIED Scott Air-Paks"

TRADE MARK



★ Yes, SCOTT AIR-PAKS give employees working in hazardous fumes complete breathing protection, enabling maintenance and repair jobs to be completed quicker and easier. Men wearing safe, efficient SCOTT AIR-PAKS under such conditions work with confidence because they know they will get all the fresh, cool air they want, no matter how hard they work. Extremely low in operating costs, simple to use and fast in action, Scott Air-Paks insure greater economies in your plant.

Write for Bulletin No. 510 showing all models or call in your Safety Equipment Dealer today!

Thousands of SCOTT AIR-PAKS are helping to make hard jobs easier and safer, throughout the Nation's industries.

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FOR SAFETY—FOR SERVICE

SAFETY EQUIPMENT DIVISION
SCOTT AVIATION CORP.
242 ERIE ST., LANCASTER, N. Y.
CANADA: SAFETY SUPPLY CO., TORONTO — BRANCHES IN ALL PRINCIPAL CITIES
EXPORT: SOUTHERN OXYGEN CO., 157 Chambers Street, New York 7, N. Y.

When inquiring check CP 8606 on handy form, pgs. 2-3

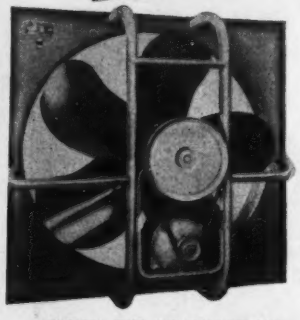
INCREASE your production with efficient–

CHELSEA

INDUSTRIAL

FANS

—A TYPE FOR EVERY APPLICATION!



CHELSEA TYPE IND EXHAUST FAN
For factories, mills, theatres, schools, hotels and churches. Features belt drive with ball bearing motor and fan shaft. Sizes from 24" to 72".

STEP-UP OUTPUT and quality of workmanship, reduce industrial accidents and employee fatigue with proper ventilating and cooling equipment. CHELSEA Fans remove excessive heat, fumes, dirt, dust and grit, also dead stale air. 30 models, in over 200 sizes, are available, and each fan or blower is especially engineered and tested for its recommended applications. All ratings are certified by P.F.M.A. test methods to insure proper performance. Check on your ventilating requirements, now.

TYPE MC MANCOOLER BELT DRIVEN

TYPE PLF POWER LINE EXHAUST FAN

TYPE BB ALL PURPOSE EXHAUST FAN

TYPE PHD PENTHOUSE UNIT

TYPE PLDX POWER LINE DUCT BOOSTER

TYPE PLDU POWER LINE AIR BLASTER

NEW CATALOG No. 400 now available!
Complete data and specifications on fans and blowers for every industrial and commercial application—address requests to Dept. R-3.

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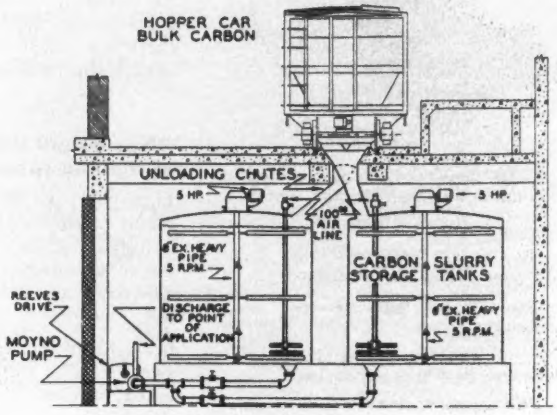
CHELSEA FAN & BLOWER CO., Inc.
PLAINFIELD, NEW JERSEY

When inquiring check CP 8607 on handy form, pgs. 2-3

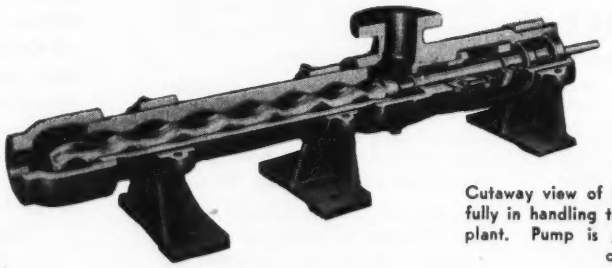
construction and maintenance



Hand dumping of activated carbon in bulk, with its resulting dust and dirt problems is eliminated with this slurry handling system. Unloading of the carbon from the hopper car is speeded by a car shaker. Revolving paddles in storage tanks maintain uniform consistency of carbon slurry

Handling of Activated Carbon for Chicago's Water Poses No Pumping, Cleaning Problem

Units now take 9500 gpd bite out of corrosive-abrasive slurry that devoured former pumps in 2 weeks



Cutaway view of the type of pump used successfully in handling the carbon slurry at the filtration plant. Pump is positive displacement type and can be reversed

PROBLEM: Handling of dry, activated carbon in average daily quantities of 9500 lb/day in removing undesirable tastes and odors from Lake Michigan raw water for drinking purposes was a dusty, dirty, time-consuming job at Chicago's South District Filtration Plant. The 35-lb bags in which the black powder was shipped to the plant were unloaded by hand from freight cars onto skids, and moved into the dry feeder system. The emptied paper bags were then burned. (In periods of high odor concentration, daily carbon dosage required as much as 85,000 lb and called for opening and hand-dumping of 2400 bags.)

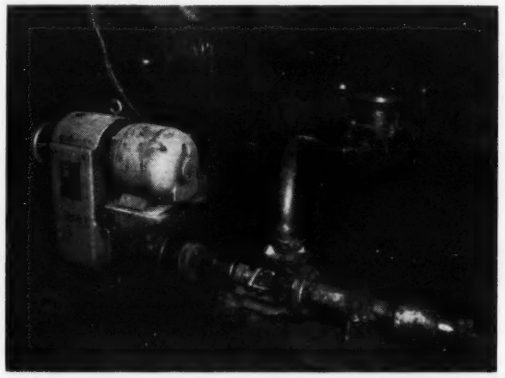
A changeover to handling the dry carbon as a slurry was decided upon, and with the slurry in concentration of 1 lb/gal of water. After only two weeks' service in the new system, the centrifugal pump used for pumping the slurry from the bottoms of the 16′ diam storage tanks located at elevation −14′ into Weir boxes on the main chemical floor at +24′ began to fail due to the corrosive and abrasive qualities of the slurry. Holes developed in the rubber lining of both the pump

impeller and the cast iron pump casing. In fact, one hole extended through the casing shortly after a week's operation. Even after relining, the pumps gave little improvement.

Solution: Direct dumping of the dry, activated carbon in bulk from a railroad hopper car into storage tanks was initiated. (See line drawing.) Although much simpler, faster, and cleaner than the laborious handling of the bags as mentioned above, this method was not totally successful for want of an adequate slurry pump.

A self-priming, positive displacement Moyno pump with a 6 gpm capacity and having a maximum capacity of 360 lb/hr carbon in slurry form was first installed as a possible solution. The quantity of carbon slurry being pumped was controlled by means of a Reeves variable pulley drive attached to the pump.

In the six-months period following installation, the Moyno handled 477,000 lb of carbon in slurry form during 2370 hr of operation — averaging 210 lb/hr. In the same period, replacements had been made on the original rotor, (a true helical screw made of chrome-plated stainless steel) and two replacements on the stator — a rubber tube having a double helical thread and molded in a steel tube.

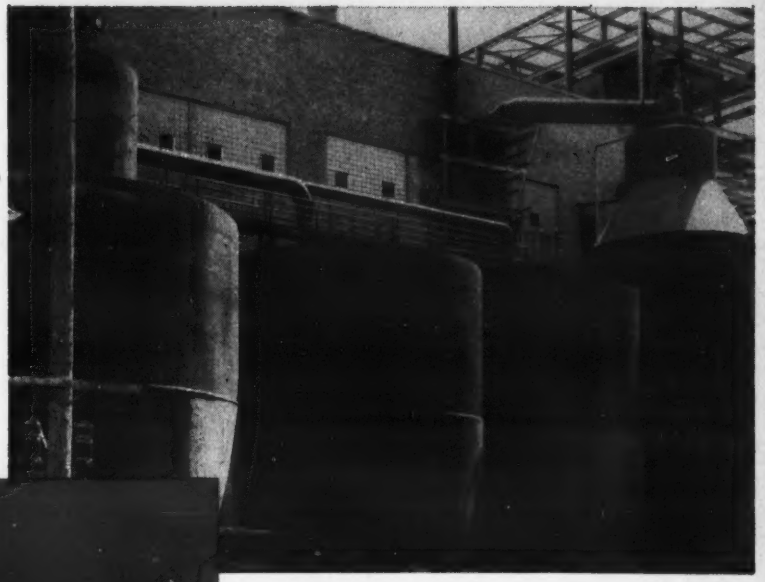


Installation of two helical screw pump units at the plant showing variable speed drive which allows accurate volumetric control of the slurry at all times. Small pump has 1¼" suction, 1" discharge; larger unit has 2½" suction, 1½" discharge. Suction and discharge lines on both units are of rubber tubing

In operation of the pump (see cutaway view) the rotor revolves about its axis by a double universal connecting rod. Contact between the rotor and the stator produces an eccentric action. At any given instant, the rotor only partially fills the volume of the stator. By a progressive eccentric action, the rotor contacts the entire surface of the stator and forces the slurry out in a continuous, uniform stream.

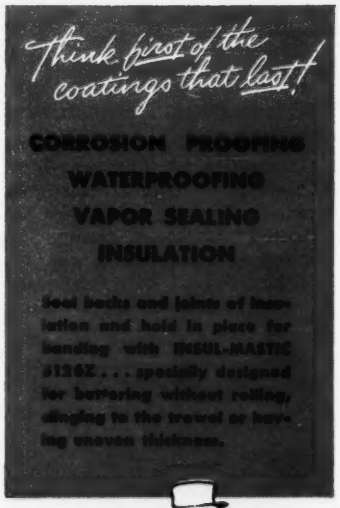
Results: Installation of the first helical screw pump proved so successful in handling the activated carbon slurry that another model with a capacity of 1800 lb/hr carbon in slurry form was added to the system, and one more unit has been ordered. In addition, four more large storage

(*Continued on next page*)



Only A
SUPERIOR COATING
..... INSUL-MASTIC

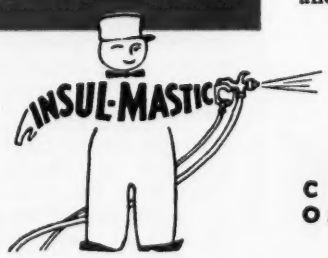
can keep your thermal insulation dry and protect the tank beneath it



17,000 square feet of tank surface at the Thilmany Pulp and Paper Company, Kaukauna, Wisconsin are protected by INSUL-MASTIC Coatings. INSUL-MASTIC 4010 vaporseals the joints and protects the surface of non-absorbent insulation on the lower half of filtrate tanks. Higher on the tanks, where less insulation is needed, INSUL-MASTIC TYPE "D" both insulates and prevents corrosion.

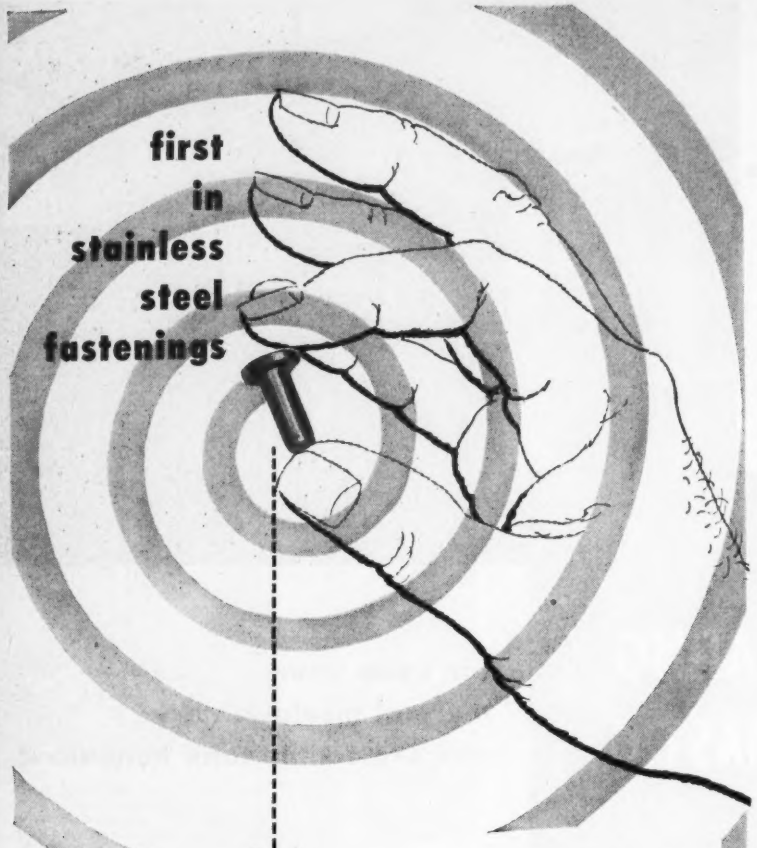
Where absorbent insulation is used, INSUL-MASTIC 4010 is needed even more because an inferior coating might permit rain or moisture vapor to dampen the insulation. Such a blanket of wet insulation held against your tanks for very long would cause severe corrosion that would mean complete re-insulating.

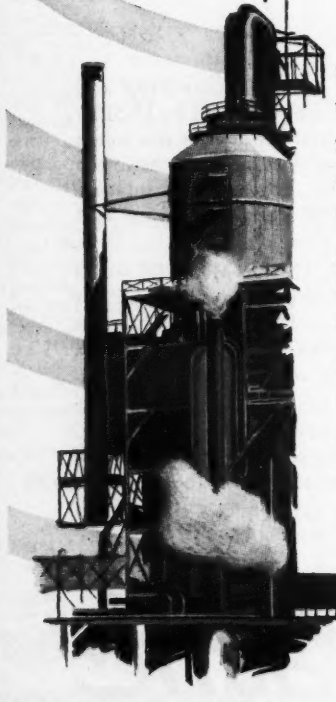
INSUL-MASTIC prevents such loss since its moisture vapor penetration rate is only .01 . . . practically nil. INSUL-MASTIC has exceptionally long life, due partially to the generous use of Gilsonite and mica. It is extremely resistant to acids and alkalis, a property of Gilsonite. Its temperature range is —40° F. to 300° F., and it is homogenized so that nothing settles in the drum.



Insul-Mastic
CORPORATION OF AMERICA
Oliver Building • Pittsburgh 22, Pa.
Representatives in Principal Cities

When inquiring check CP 8608 on handy form, pgs. 2-3





In the *CHEMICAL* industry, buyers have learned to depend on ANTI-CORROSIVE for fast, dependable service on all types of stainless steel fastenings. Draw on our IN STOCK inventory of more than 7,000 items and sizes and a production capacity geared to produce precision fastenings in large or small quantities, from huge 7/8" hexagon head bolts to tiny #0-80 machine screw nuts.

Write for Catalog 53E today.

anti-corrosive metal products co., inc.
castleton-on-hudson, new york

When inquiring check CP 8609 on handy form, pgs. 2-3

CONSTRUCTION

(*Continued from preceding page*)

tanks are now under construction to handle in slurry form, nearly all the carbon (2.8 to 3.5 million lb annually) used in the plant.

The present slurry system now moves smoothly, speedily, and steadily. Double handling of the carbon with the resulting dirt problem for both the men and the clean operation of plant equipment has been practically eliminated.

(Information on handling the activated carbon slurry provided by the Water Purification Div., Department of Water and Sewers, Chicago, Ill. Moyno pumps are manufactured by Pump Division, Robbins & Myers, Inc., Dept. CP, 1345 Lagonda Ave., Springfield, Ohio . . or for more information check CP 8610 on handy form, pages 2 and 3.)

180° bend possible with lightweight duct . . .

impregnated, woven fabric covers spiral rust-resistant wire

Uses: Primary applications will be in air handling, fume removal, and dust collection. Duct may be used in material handling of products such as carbon black, dry cement, etc.

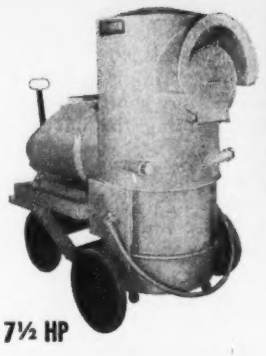
Features: Available in diameters from 1 to 30 inches, duct can be bent to a tight 180° turn without kinking.

Description: Flexible duct is made of a helix of rust-resistant wire. Covering is a woven fabric coated with tough plastic. Combination is resistant to oils, gases, acids, alkalis. It is flame-resistant and also stands up to abrasion.

Member of a family of ducts in diameters from 1 to 30 inches, this particular duct is designed for flexibility and lightweight. It is reported that ducts can be installed without special fittings.

Other special ducts produced include a high temperature type made of glass fiber fabric coated with silicones. It can be used for high temperature exhausts.

(Flexflyte Green Label is a development of Flexible Tubing Corp., Dept. CP, Guilford, Conn. . . . or for more information check CP 8611 on handy form, pages 2 and 3.)



FOR THE **BIG** CLEANING JOBS IN INDUSTRY

7½ HP

This is the new heavy duty Spencer Portable Vacuum cleaner, reduced in height so that it will go through any factory door or onto most elevators. Its 7½ HP will supply more than enough vacuum power for two operators working at once. The dirt capacity is large—removable can rolls on casters. It will pick up heavy metals, reclaim foundry sand, remove hot materials and clean the largest factory areas in record time. Smaller machines for office and normal industrial service. Ask for Bulletin No. 102 and 112.

THE SPENCER TURBINE COMPANY • HARTFORD 6, CONNECTICUT
SPENCER HARTFORD
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When inquiring check CP 8612 on handy form, pgs. 2-3

J. E. SIRRINE CO.
GREENVILLE • SOUTH CAROLINA

Engineers
ESTABLISHED 1902

PLANT DESIGN & SURVEYS • CHEMICAL • ELECTROCHEMICAL • METALLURGICAL PRODUCTION • TRADE WASTE DISPOSAL • WATER SUPPLY & TREATMENT • ANALYSES & REPORTS

When inquiring check CP 8613 on handy form, pgs. 2-3

Trolley wheels are greased as they roll along track of conveyor . . .

automatic system shoots lubricant into bearings at pressure of 800 to 1000 pounds

Uses: Delivers a pre-set, constant shot of oil or grease to each trolley wheel on each side of a trolley conveyor system. Suggested as "companion" to manufacturer's "Oil Mist" system which automatically lubricates chain linkage and knuckle joints of load pendant hooks.

Features: Wheel spacing is no problem: they can be yards apart, irregular in spacing, or as close as on 8″ centers. System is as easily adaptable to wheels 3″ in diameter as 4 or 6″.

Description: Lubricator is sold as a "package", complete with a section of track, lubricant reservoir, and right and left hand lubricator assemblies with protective covers and anchor plates. It is operated on 115 volt, 60 cycle current. An air line connection is made into the unit when grease is used. The air is regulated to apply pressure to a follower plate on the lubricant to assure delivery of the grease to the piston plunger. Headroom of 22″ over the top of the I-beam is required.

As each wheel reaches the spot on the track at which the lubricator is installed, a coupler clamps the lubricant fitting on its hub and delivers the required amount of grease or oil. The coupler then disengages and is ready for the next wheel. As the applicator and coupler engage the grease fitting on each wheel, a pressure of 800 to 1000 lb forces the lubricant into the bearing. Amount of lubricant can be adjusted to 0.005 cu in — enough for 32,000 shots from the 5-lb grease or 2½-qt oil reservoir.

After every wheel has been serviced, the system is switched off, ready to be switched on again when needed.

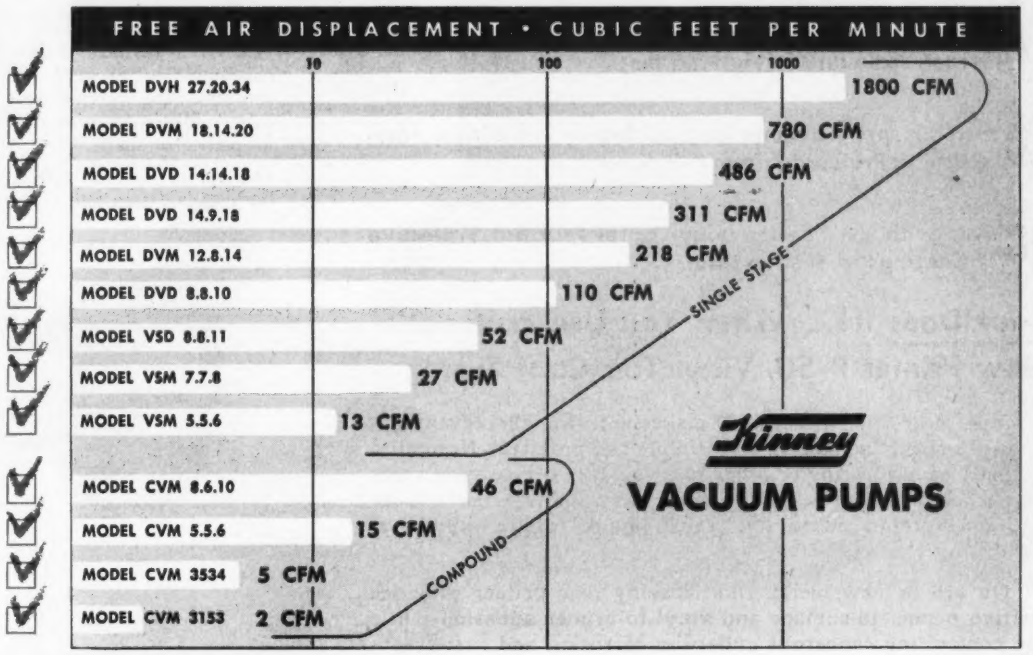
(Announced by the Alemite division of Stewart-Warner Corporation, Dept. CP, 1826 Diversey Pkwy., Chicago 14, Ill. . . . or for more information check CP 8614 on handy form, pages 2 and 3.)

Industrial maintenance means more than just upkeep

According to informative unit from a cost reduction program, good plant maintenance, in addition to meaning upkeep of buildings, equipment and service, plays a vital part in planning and establishing manufacturing facilities and equipment. In addition to discussing how to keep equipment, methods and facilities in top operating condition, booklet gives a guide to organizing an industrial maintenance program and a check list for machinery.

Bulletin also covers features of lighting, air conditioning, color painting, noise conditioning, vibration control, plant architecture and good housekeeping. "Industrial Maintenance" is issued by Wheeler Associates, Inc., Dept. CP, 15017 Detroit Ave., Cleveland 7, Ohio. When inquiring specify CP 8615 on handy form, pages 2 and 3.

More pumps to pick from!



What's your vacuum problem? Kinney offers you the BIG LINE of vacuum pumps — the broadest range of mechanical, oil-sealed vacuum pumps on the market. Pick the exact pump you need from our line. Get fast pump-down, fast recovery speed, and reliable low absolute pressure — and get them efficiently and economically by buying the Kinney Pump that's right for the job. Experienced vacuum engineers, here in Boston and in all our branch offices, will be glad to discuss the applications of vacuum in your plant.

Kinney

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KINNEY MANUFACTURING CO.
3573 WASHINGTON STREET • BOSTON 30, MASS.

☐ Please send Bulletin V-51B describing the complete line of Kinney Vacuum Pumps. Our vacuum problem involves:

☐ Vacuum drying
☐ Vacuum coating
☐ Vacuum metallurgy
☐ Vacuum impregnating
☐ Vacuum distillation
☐ Vacuum research

☐ Please have your vacuum engineer call at our plant.

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Address.....
City.....
State.....

SUBSIDIARY OF THE NEW YORK AIR BRAKE CO.

When inquiring check CP 8616 on handy form, pgs. 2-3

Protect Old or New Steel This Simple as A B C Way!

After only routine surface preparation to remove loose rust, scale and foreign matter . . .

Brush or spray on one coat of highly inhibitive, fast-drying Prufcoat Primer P-50 and . . .

Cover with "A" Series (vinyl base) Prufcoat Protective Coatings in desired color.

Easy Does It! . . . When You Use Prufcoat's New Primer P-50, Vinyl Top Coat System.

Yes, Prufcoat Primer P-50 makes securing the advantages of vinyl coating protection both simple and practical. Normally, no costly sand-blasting or other fussy surface preparation steps are needed . . . simply wire-brush and scrape to remove loose rust and foreign matter . . . then apply highly inhibitive, fast-drying Primer P-50.

On old or new metal, this amazing new primer provides positive primer-to-surface and vinyl-to-primer adhesion while also controlling cancerous underfilm corrosion and rust creepage. It's the revolutionary, *simple as A B C* vinyl coating system that licks the toughest corrosion problems while slashing hours off labor time . . . dollars off vinyl painting costs.

For the full story, send for Prufcoat Technical Bulletin No. 015. Or better still, order a trial quantity of Primer P-50 with some "A" Series (vinyl base) Prufcoat and *see for yourself* under your own plant conditions. Act today!

Check These Primer P-50 Features!
- ✓ Heavy-bodied, loaded with inhibitive pigments
- ✓ Needs only routine surface preparation
- ✓ Applies by brush or spray and dries fast
- ✓ Assures positive adhesion to old or new metal
- ✓ Provides a primer surface to which vinyl top coats bond securely
- ✓ Controls cancerous underfilm corrosion and rust creepage

PRUFCOAT LABORATORIES, INC.
50 East 42nd Street, New York 17, N. Y.

To Save Time, Trouble *and* Money
Just "PRIME and PAINT" with PRUFCOAT

When inquiring check CP 8617 on handy form, pgs. 2-3

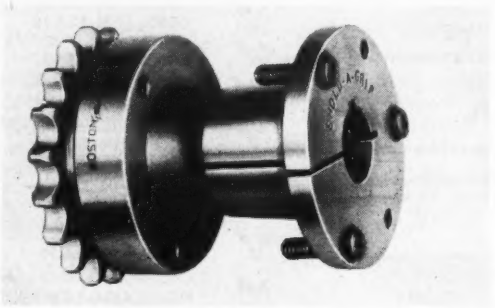
Tapered bushings give single sprockets adaptability to many shafts . . .

in steps of 1/16", interchangeability extends from ½ to 2½" diam shafts

Uses: For use with sprockets.

Features: Makes manufacturer's sprockets interchangeable — in steps of 1/16", it is possible to use same size sprocket on shafts from ½ to 2½" diam. Eliminates need to rebore stock sprockets to fit particular shafts.

Description: The Shold-A-Grip split tapered bushing is drawn into tapered hole by tightening of



Makes sprockets interchangeable

cap screw. As both the ID and the OD of the bushing are ground, bushing grips both sprocket and shaft with the equivalent of a press fit, even on shafts which are undersized as much as .005 inches.

In removing bushing, bolts in shoulder of sprocket are unscrewed and removed. Two of these are then reinserted into threaded hole of bushing flange and tightened so they butt against surface of the sprocket shoulder. Bush will then be separated from socket.

Manufacturer's sprockets are available from stock in sizes from ½ through and including 1¼" pitch. Both bushing and sprocket are of machine-hardened steel and can be case hardened.

(Development of Boston Gear Works, Dept. CP, 14 Hayward St., Quincy 17, Mass. . . . or for more information check CP 8618, pages 2 and 3.)

Boiler scale and corrosion are eliminated by use of liquid product . . .

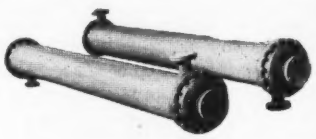
also said to reduce foaming and embrittlement

Uses: For treatment of boiler water. It is said to be especially suitable for boilers from 50 to 500 hp where pre-treatment of feedwater is normally not practiced. Material can also be used for treating cooling water in refrigeration and air conditioning systems.

Features: According to manufacturer, wide use of product for boiler water treatment has shown it to soften existing scale, gradually remove it, and prevent further scale formation. It is claimed that material will absorb oxygen and other corrosive

THESE **EXAMPLES OF VERSATILITY** show that DOWNINGTOWN IRON WORKS can help YOU, too

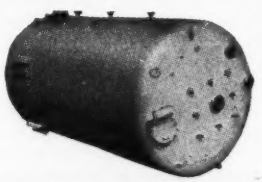
One of six carloads of Heat Exchangers, Coolers, Condensers and Reboilers designed and fabricated by our Heat Transfer Division. Materials used consist mainly of type 304 Stainless Steel.



Two of four Steel Shell Condensers with Ampco 8 Heads and Tube Sheets. These condensers were built for export to the Middle East.

This condenser is 16" DIA. x 12' tube length; Bundle ¾" O.D. type 316 Stainless tubes; Double tube sheet also of type 316 . . . manufactured by the Heat Transfer Division of DOWNINGTOWN.

One of two all-Aluminum units fabricated by DOWNINGTOWN IRON WORKS, INC. (Welding was performed by the Inert-Gas-Metal-Arc method.)



One of 4 Fermentors, 12'0" x 22'7" high tangent. 10% Stainless Clad, type 304 Stainless . . . manhole body and connections type 304 Stainless. Each fermentor equipped with coils of 3" O.D. x 14 ft. tubing . . . type 304 Stainless.

Correct Design—Right Materials

Useful literature yours for the asking!

DOWNINGTOWN IRON WORKS, INC.
DOWNINGTOWN, PA.
STEEL & ALLOY PLATE FABRICATION
HEAT EXCHANGERS

NEW YORK OFFICE 30 CHURCH STREET
DIVISION OF
PRESSED STEEL TANK CO.
MILWAUKEE-WIS.

When inquiring check CP 8619 on handy form, pgs. 2-3

gases commonly found in boilers, eliminating corrosion and pitting. It also reduces foaming or embrittlement.

Description: Product used for boiler water treatment is a liquid extracted from red cedar by a complex process. It consists mainly of a colloidal mixture of dissolved lignins, tannins, and semi-resinous materials. Recommended dosage is approximately one quart per 100 hp per week. This, of course, is influenced by condition of boiler and percentage of "make-up," and also by the condition of the water.

Nature of product is said to remove danger of overtreating. It is non-toxic to personnel either internally or externally. It is also non-injurious to metals, gaskets, or packing materials.

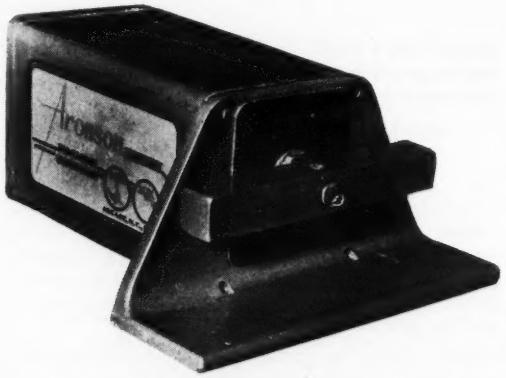
(Borgana boiler water treatment product is distributed by Strong, Carlisle, and Hammond Co., Dept. CP, 1395 W. 3rd St., Cleveland, Ohio . . . or for more information check CP 8620 on handy form, pages 2 and 3.)

Reversing control toggle switch is operated by foot or hand

Uses: For welding positioner control or motor control.

Features: Action can be either non-spring return (maintained contact) or self-centering (momentary contact); changing from one to the other is easily accomplished by relocating one screw.

Description: Reversing, foot-operated toggle switch is made up of a size 00 drum switch encased in steel enclosure that is dust- and oil-tight. Toggle



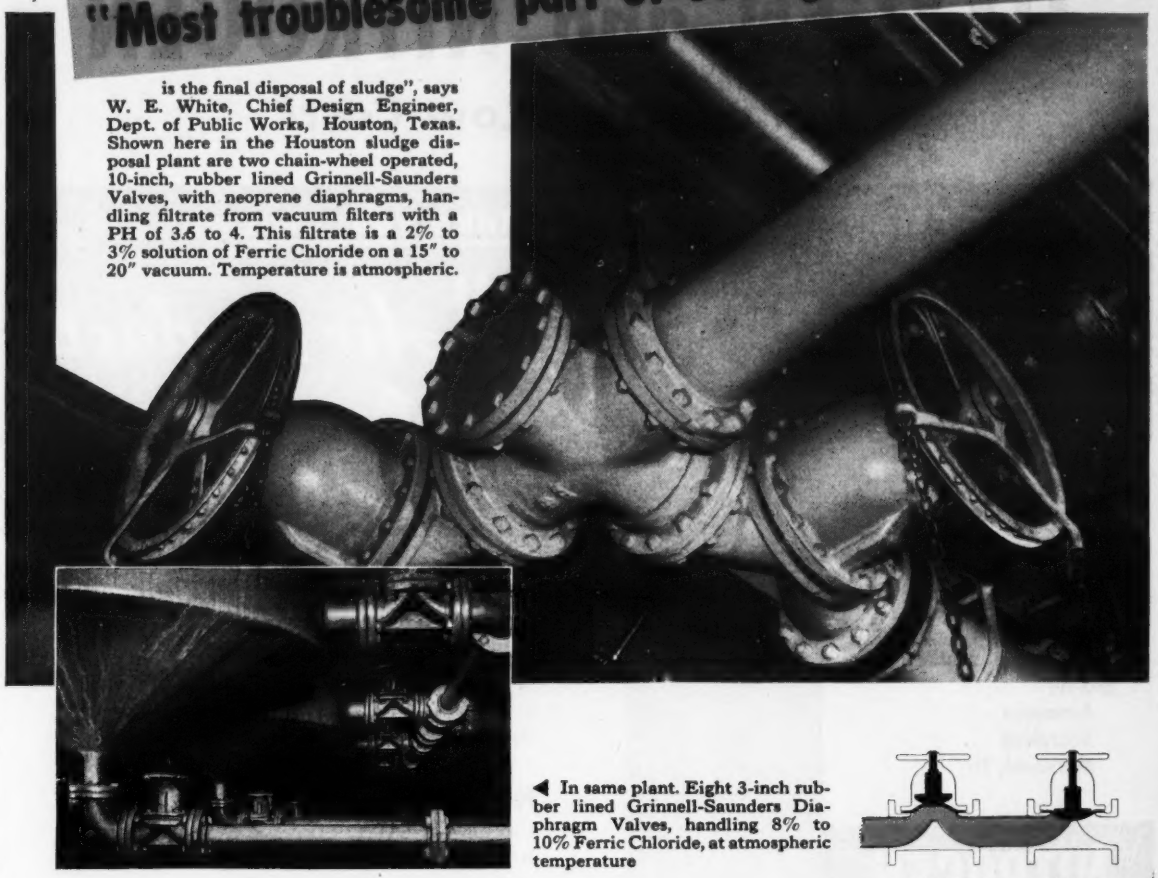
Bar shown at front of toggle switch can be manipulated by hand or foot

bar can also be manipulated by hand as conveniently as a regular drum switch. The three-pole switch has twelve terminals and will control single-phase, two-phase, three-phase, and direct current motors. Rating is ¾ hp for AC and ⅛ hp for DC motors.

(Product of Aronson Machine Co., Dept. CP, Arcade, N. Y. . . . or for more information check CP 8621 on convenient Reader Service slip, pages 2 and 3.)

"Most troublesome part of Sewage Treatment..."

is the final disposal of sludge", says W. E. White, Chief Design Engineer, Dept. of Public Works, Houston, Texas. Shown here in the Houston sludge disposal plant are two chain-wheel operated, 10-inch, rubber lined Grinnell-Saunders Valves, with neoprene diaphragms, handling filtrate from vacuum filters with a PH of 3.6 to 4. This filtrate is a 2% to 3% solution of Ferric Chloride on a 15" to 20" vacuum. Temperature is atmospheric.



◀ In same plant. Eight 3-inch rubber lined Grinnell-Saunders Diaphragm Valves, handling 8% to 10% Ferric Chloride, at atmospheric temperature

A job well-suited to

GRINNELL-SAUNDERS DIAPHRAGM VALVES

Streamlined flow. Smooth, streamlined passage, without pockets, prevents trapping of solids. Frictional resistance is at a minimum — regardless of direction of fluid flow. No disc holder in fluid stream.

Leak-tight closure against grit, scale, suspended solids. The resilient diaphragm, plus the large area of contact, gives leak-tight closure against pressure or vacuum.

Working parts absolutely isolated from fluid. Diaphragm completely seals off working parts from fluid in the line. No sticking, clogging or corroding of working parts. Valve lubricant cannot contaminate fluids.

Body, lining and diaphragm materials to meet service condition. Bodies stocked in cast iron, malleable iron, stainless steel, bronze and aluminum; other materials on special orders. Valve bodies lined with lead, glass, natural rubber or neoprene. Diaphragm materials of natural rubber or synthetics.

Minimum maintenance. No refacing or reseating is required. No packing glands to demand attention. New diaphragm can be inserted without removing valve body from the line.

GRINNELL

WHENEVER PIPING IS INVOLVED

Write for Grinnell-Saunders Diaphragm Valve Catalog

Grinnell Company, Inc., Providence, Rhode Island • Coast-to-Coast Network of Branch Warehouses and Distributors

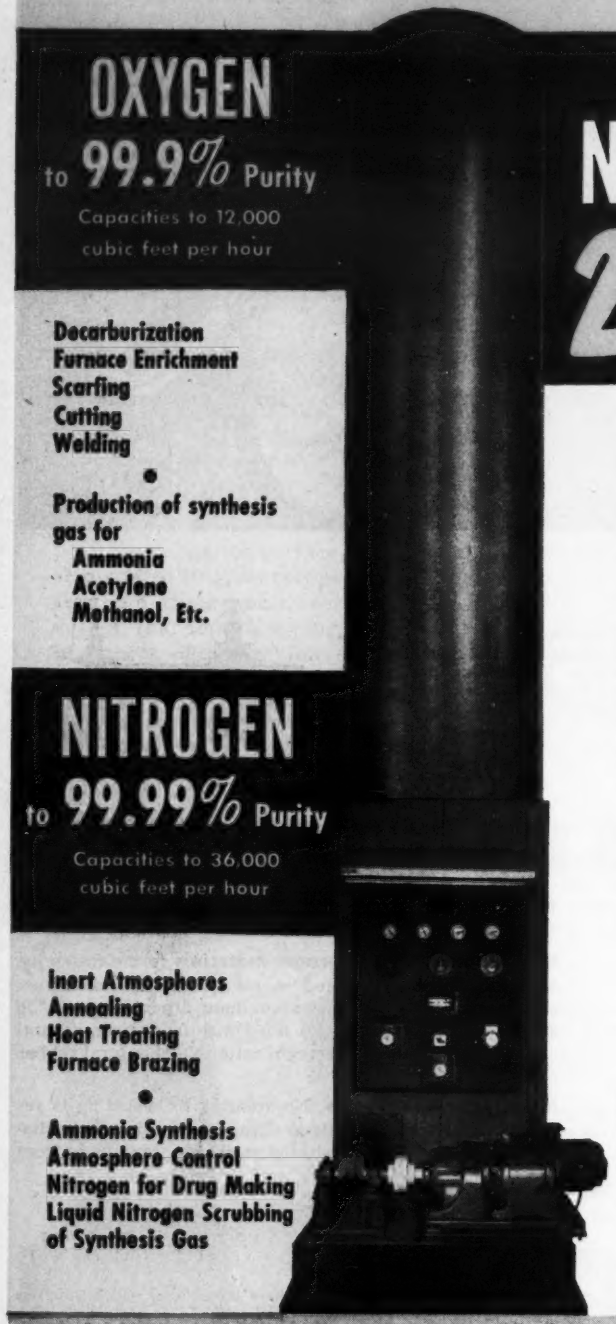
pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves • Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies • industrial supplies • Grinnell automatic sprinkler fire protection systems • Amco air conditioning systems

When inquiring check CP 8622 on handy form, pgs. 2-3

Now! Super High-Purity

OXYGEN and NITROGEN

at Amazingly Low Cost!



OXYGEN

to 99.9% Purity

Capacities to 12,000 cubic feet per hour

Decarburization
Furnace Enrichment
Scarfing
Cutting
Welding

•

Production of synthesis gas for
Ammonia
Acetylene
Methanol, Etc.

NITROGEN

to 99.99% Purity

Capacities to 36,000 cubic feet per hour

Inert Atmospheres
Annealing
Heat Treating
Furnace Brazing

•

Ammonia Synthesis
Atmosphere Control
Nitrogen for Drug Making
Liquid Nitrogen Scrubbing of Synthesis Gas

Make your own with the

NEW Air Products Incorporated 2-in-1 High-Purity GENERATORS

DUAL PRODUCTION—*One* Generator makes *both* oxygen and nitrogen at *super high-purities*, ready to be piped to points of use. You save the cost of an extra generator . . . eliminate all transportation costs, down-time due to delivery failures, etc.

NEW VERSATILITY—You can operate the new generators to produce *what* you want *when* you want it: compressed oxygen and nitrogen *simultaneously* . . . compressed oxygen and *low pressure* nitrogen simultaneously . . . compressed oxygen *alone* . . . compressed *or* low pressure nitrogen alone . . . *liquid* oxygen and/or nitrogen.

Find out what this important new development can mean to you. Write, stating your requirements.

AIR PRODUCTS, INCORPORATED
Dept. K . Box 538, Allentown, Pa.

Also Air Products Tonnage Generators for OXYGEN-NITROGEN Unlimited!

Produce huge quantities of very low cost oxygen and nitrogen in gaseous or liquid form. Standard models, or specially designed. Cycles according to individual requirements. Generators to produce any quantities, at any purities and pressures. Inquire!

Specialists in Equipment for All Low-Temperature Processes

When inquiring check CP 8623 on handy form, pgs. 2-3

Open gear lubricant will not be thrown off gear surface by centrifugal force . . .

manufacturer's line includes high temp lubricant containing molybdenum disulfide

Tenac is an open gear lubricant applied by spray, dip, or brush. It can be so applied because it is cut back by a solvent which, following evaporation, leaves a semi-plastic film on gear surface. Manufacturer reports that its adhesive characteristics are sufficient to keep the film from being thrown off gear surface by centrifugal force. Adhesiveness is attributed to additive which also provides "wetting-out" power and continuous protective coating.

Manufacturer's line of additive treated lubricants with petroleum base include Hi-Temp Oil 303 and Cosmolube 101 and 102 (greases). The oil contains a synthetic, high temperature fluid and molybdenum disulfide — combined to offer the fluid advantages of synthetic oil plus the load carrying capacity and high temperature properties of molybdenum disulfide. Resisting breakdown at temperatures up to 800°F, the oil will not separate in storage and, reportedly, has higher oiliness than graphite mixtures and can be fogged in automatic lubricators.

Cosmolube 101 and 102 are high temperature greases made up of non-soap base. They are a colloidal mixture and have no melting point. Greases retain their form to burning point.

(Lubricants are products of E. F. Houghton & Co., Dept. CP, 303 W. Lehigh Ave., Philadelphia 33, Pa. . . . or for more information check CP 8624 on handy form, pages 2 and 3.)

Small space holds burner which pre-vaporizes oil for rapid heating . . .

can be operated to produce reducing atmosphere or soot-free gas for direct-drying use

Uses: Vaporizing oil burner has been applied to a high-heat-release fire tube boiler and a high-heat-release gas heat exchanger because of its ability to generate large amounts of heat in a small space. Other "space-saving" applications include radiant tubes, pressurized chemical processes and boilers, and the gas turbine.

Contact drying of certain textiles, chemicals, foods and other products, with burner's products of combustion, is contemplated. In addition, burner can operate with fuel-to-air ratios which produce gases with reducing constituents such as carbon monoxide and hydrogen, or at ratios which produce carbon monoxide and dioxide in equal proportions.

The oil burner, as developed, has been used as a combination gas-oil burner, with no modifications to the design except for gas injection at an upstream point. The resulting flame, with either gas or oil, has the same general characteristics, enabling the use of the same heat transfer equipment for similar performance.

Features: Internal pre-vaporization of the fuel assures rapid burning of distillate fuel oils, and cuts installation space needs because a large combustion chamber is not required. Both the high-heat-release boiler and heat exchanger mentioned above have operated for over 1000 hours, demonstrating high heat flux and efficient performance. Heat transfer rates of over 28,000 and 19,000 Btu/sq ft/hr, respectively, have been attained.

Free carbon is not released under normal conditions of operation. Tests have been made in which the products of combustion of the burner have been brought in contact with a clean, white surface, and no discoloration resulted. Gas-to-gas and gas-to liquid heat exchangers with extended surfaces and small flow areas have been used, and no soot deposit problems were encountered.

Description: Air entering the burner is preheated in a passage within the burner, and then is passed through a nozzle into a concentric vaporizing tube which is heated by recirculation of combustion gases. Here it mixes with a spray of oil to form a vapor which burns as it leaves the tube and enters the larger combustion cylinder. The flame, clear and non-luminous under usual conditions, comes to a point downstream in the combustion tube.

Regulation is conventional: by linking fuel and air valves together. At the full output point, the burner fuel-air mixture is set near the stoichiometric ratio. At low outputs, the valves are usually adjusted to permit operation with excess air in order to maintain good breakup of the fuel spray, and consequent vaporization. Completely automatic controls have been successfully installed in which burner output is modulated according to the demand of a temperature or pressure sensitive element.

A reducing gas is obtained by operating the burner at rich mixtures.

(Burner was described before 73rd Annual Meeting of the ASME, and is a development of Thermal Research and Engineering Corporation, Dept. CP, Conshohocken, Pa. . . . or for more information check CP 8625 on handy Reader Service slip, between pages two and three.)

Lubricant penetrates inner recesses of oven chain where wear is most prevalent

Particularly useful as an oven chain lubricant, Molykote M-30 is a dispersion of near-colloidal particles in a polyalkylene glycol vehicle. Its success is attributed to the fact that this vehicle allows the particles to be carried onto the innermost recesses of the chain, where wear is most prevalent. It is reported that the vehicle dissipates under heat and leaves a smooth, tenacious film of lubricant attached to the pins, bushings, and rollers. Lubricant is applied by brush or spray.

(Product of The Alpha Corp., Dept. CP, 179 Hamilton Ave., Greenwich, Conn. . . . or for more information check CP 8626 on handy Reader Service slip between pages 2 and 3.)

Published by SCHUTTE and KOERTING Company

ENGINEERING News

JET APPARATUS • HEAT TRANSFER EQUIPMENT • STEAM JETS • CONDENSERS AND VACUUM PUMPS • OIL BURNING EQUIPMENT

Design, Application, Operation of Flow Indicators Described In New Bulletin

Bulletin 18-W, illustrated at left, contains complete information on the many types of Flow Indicators manufactured by SK.

Flow Indicators, installed in pipelines, permit visual observation of fluid flow, direction of flow and flow conditions. These indicators are widely used throughout industry to prevent damage to valuable equipment.

SK Flow Indicators are suitable for service with any kind of fluid—liquid, gas, vapor, slurry, or sludge—provided the fluid is transparent enough to permit observation. They are designed to operate continuously—even under severe operating conditions—with minimum maintenance.

Request a copy of Bulletin 18-W for your files. It's a useful 12 page reference source.

Details on SK FLOW INDICATORS incorporated in BULLETIN 18-W include:

- **Design and construction features**
- **Materials of construction**
- **Tables of operating pressures, temperatures, dimensions**
- **Operating data**
- **Performance curve charts**
- **Ordering specifications**

NOTE: *For information on SK Rotameters, accurate fluid flow measuring instruments, request Bulletin 18-RA which pictures and briefly describes the many types manufactured by SK.*

SCHUTTE and KOERTING Company

Manufacturing Engineers

CORNWELLS HEIGHTS

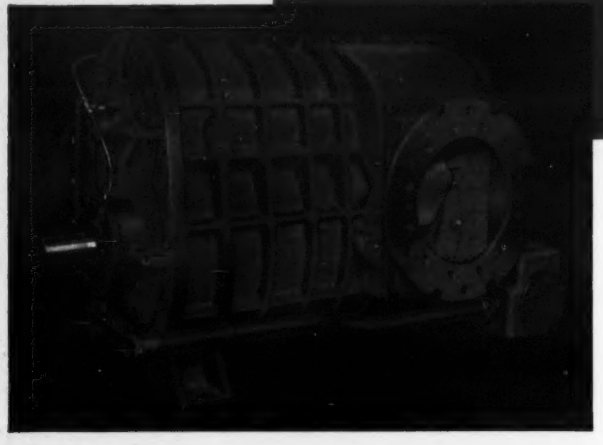
BUCKS COUNTY, PA.

Representatives in Principal Cities

When inquiring check CP 8627 on handy form, pgs. 2-3

STANDARDAIRE BLOWERS take the SHOCK out of compression

The Standardaire Axial Flow Positive Displacement Blower



Standardaire Axial Flow Positive Displacement Blowers operate on a principle of compression unlike any other blowers. Their symmetrically generated rotors act as an air screw, drawing in and discharging air smoothly from the pockets which form between them.

Compression is gradual, completely internal and free from shock. Internal pressure is raised to equal discharge pressure before the pocket registers with the discharge port, eliminating the slap back and loading of internal parts common to many types of blowers.

Standardaire Blowers move more air, with less wear, less maintenance and power cost than any blowers of equal weight, size or comparable design.

For further information, write:

READ STANDARD CORPORATION

BLOWER-STOKER DIVISION
370 Lexington Avenue, New York 17, New York

When inquiring check CP 8628 on handy form, pgs. 2-3

Air valve for mechanical press "fails safe" and functions as its own trouble signal . . .

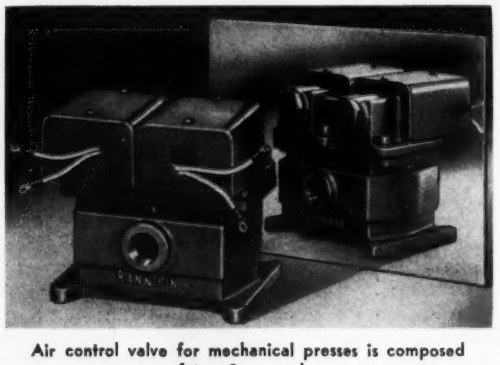
specifically developed to avoid press "repeats"

Uses: As air control valve on mechanical presses controlled by air-operated clutches and brakes.

Features: P-M Series BB-5 air control valve is composed of two 3-way valves in parallel in one common body and is designed to make press "repeats" practically impossible. Both valves must operate to start the press, but if for any reason only one valve reverses, the unit "fails safe" and the press stops. If one of the main valves should happen to stick in the "on" position, escaping air is released from the faulty valve as well as the press clutch and brake mechanism so that the press stops and the valve acts as its own trouble signal.

Another production advantage derived from this valve is that manufacturer's tests have shown it to have 50% more air flow capacity than a single "full flow" valve of the same size. This implies a quicker means of filling and exhausting press clutches and brakes.

Description: Each main valve of the BB-5 air control valve consists of a removable cartridge containing the only moving part of main valve, the piston-poppet assembly. These parts are pressure actuated in both directions. Two solenoids in this dual valve are connected in parallel in the electric

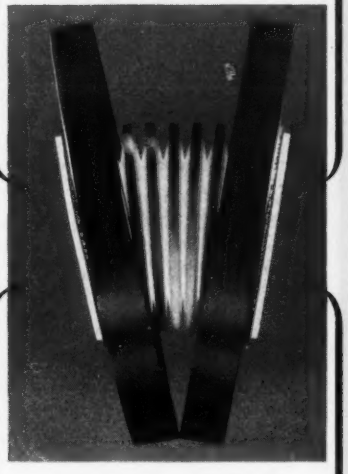


Air control valve for mechanical presses is composed of two 3-way valves

circuit of press. They are short-stroke, low-amperage solenoids with transformer-type silicon iron plungers and frames. Each pilot valve section has a "pressure return type" pilot stem, which opposes the action of solenoid and provides positive reversal of valve the instant the solenoid is de-energized. Solenoids can be completely disassembled, and coils for 115, 230, or 460 volts and for either 25 or 50/60 cycles are available as standard.

The two pilot sections are interlocked pneumatically so that, if either solenoid fails to operate, the valve will not build up enough pilot pressure to operate either main valve and the press won't start. If either solenoid or either pilot valve reverses when the press is moving, pilot pressure will fall so low on both sides that both main valves will reverse and the press will stop. Only instance when the valve wouldn't cause the press to stop would be in the event of an

Superior is the word for "TEFLON" BELLOWS made by Dore'!



• When selecting "TEFLON" Bellows, it's all important to select the right manufacturer. John Dore', Inc. has the production facilities and technical skill for making "TEFLON" Bellows of uniform density and close wall tolerances. Every style E-8 Bellows is rigidly tested and inspected prior to shipment.

Dore' "TEFLON" Bellows are built for 25-lb. w.p., and furnished with integrally gasketed flanges. Immediate delivery is made on both standard and special sizes of bellows. When ordering, specify pipe size and flange-to-flange dimension.

DO BUSINESS WITH DORE' for "TEFLON" SHEETS, RODS, TUBES, PACKING SETS, GASKETS, SPECIAL MOLDED SHAPES AND TAPES.

"TEFLON" Shapes at their best — when molded by Dore'.

John L. Dore', Co.

SALES AGENTS IN U.S.A. FOR JOHN L. DORE' INC.
MOLDERS OF "TEFLON" AND "KEL-F" SHAPES
P. O. BOX 6002 • HOUSTON 6, TEXAS

When inquiring check CP 8629 on handy form, pgs. 2-3

identical failure (both pilot sections or both main valves fail on the same stroke of the press). Under the law of probabilites, this would not happen in many millions of press cycles.

(P-M Series BB-5 air control valve is a product of Hannifin Corp., Dept. CP, 1150 S. Kilbourn Ave., Chicago 24, Ill. . . . or for more information check CP 8630 on handy form, pages 2 and 3.)

Acid, alkali, water-proof floors are colorful

Uses: Acid, alkali, and water resistant coating for concrete, masonry, wood, brick, stone, and metal flooring surfaces. Recommended for new as well as old surfaces, either indoors or outdoors.

Features: Said to keep floors in service longer by preventing dusting and sanding, penetration of liquids, and splintering and raising of grain. Makes maintenance of floors much simpler job. Available in range of colors — battleship gray, tile red, emerald green, linoleum brown, and also clear.

Description: Complete materials for a Colorflex Plus A.W.A. treatment are packaged in unit containers. Unit consists of a cleaner (Floor Ready) and the Colorflex.

Floors are first swept clean and then treated with a water solution of the cleaner. After rinsing and thorough drying, Carboflex is brushed on surfaces. This is a penetrating coat and dries in 4 hours. A finishing coat is then applied and allowed to thoroughly dry (24 hr) before use.

(Product of the Flexrock Company, Dept. CP, 36th and Filbert Sts., Philadelphia 4, Pa. . . . or for more information check CP 8631 on handy form, pages 2 and 3.)

Graphic guide to selecting temp, pressure regulators

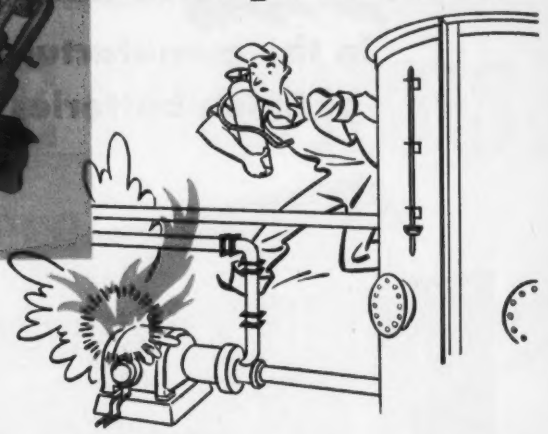
Written in non-technical language, 36-page publication utilizes charts, tables, capacity curves, and sectional drawings to enable reader to select proper type and size of pressure regulator, temperature regulator or pump governor to do a specific job. Introduction to bulletin discusses each major type of regulator as well as factors affecting the material of which it is constructed. Simple charts shows fundamental temperature limitations of several common valve materials.

Methods of approximating steam requirements are stated in publication to give a few practical hints which are applicable to unit heaters, cooking kettles, autoclaves, and water heaters. Section describing steam regulators includes illustrations of typical installations and discusses proper way to install them. Bulletin concludes with listing of hydraulic data, conversion tables, and flange dimensions and drilling specs.

"Step Selection Chart" is issued upon letterhead request to Foster Engineering Co., Dept CP, Union, N. J.

Minor Fire or Explosion?

YOUR LINES are SAFE with



Lapp TUFCLAD®

Y-Valves and Angle Valves (in sizes to 6"), safety valves, flush valves, plug cocks, are available in Lapp solid porcelain with TUFCLAD armor. Also pipe and fittings (to 8") and a variety of special shapes.

Lapp

PROCESS EQUIPMENT

CHEMICAL PORCELAIN VALVES • PIPE • RASCHIG RINGS

PULSAFEEDER CHEMICAL PROPORTIONING PUMPS

SOLID CHEMICAL PORCELAIN ARMORED WITH FIBERGLASS-REINFORCED PLASTIC

Now there's mechanical security to go with the chemical purity and corrosion-resistance of solid Lapp Chemical Porcelain. TUFCLAD armor is the answer—multiple layers of strong Fiberglass fabric impregnated and bonded to the body with an Epoxide resin of high strength and chemical resistance. It serves as an insulator against thermal shock—a cushion to accidental impact. And it is itself *tough* and strong, able to hold operating pressures against gross leakage even if porcelain is cracked or broken. Provide this protection to your personnel, equipment and product.

WRITE for description and specifications. Lapp Insulator Co., Inc., Process Equipment Division, 724 Maple St., Le Roy, N. Y.

When inquiring check CP 8632 on handy form, pgs. 2-3

HOW DUST IS ELIMINATED in the manufacture of Exide batteries

View of the Dustube Collector for recovery of lead dust.

Four of the battery plate brushing machines. Note hooding for corralling all dust created.

DUSTUBE® COLLECTOR *keeps working areas clean and healthful*

Battery plate cleaning and trimming operations at The Electric Storage Battery Company's Chicago plant created manifold dust control problems. The number of processing stations involved and the characteristics of the dust — lead oxide — necessitated extensive hood designs to control the dust at its source and high efficiency collector equipment to salvage the valuable material.

The solution to the problem, as illustrated in the pictures above, consists of adequate hooding at the dust creating stations plus a large Dustube cloth tube type Collector. Results have been "highly satisfactory" according to plant officials. Working areas are clean and healthful. The lead oxide is recovered in the dry state and is handled without de-watering, drying or other processing.

The Dustube Collector has an unusual flexibility in handling dust or fume in all types of chemical processes. Its simple, practical design provides the highest efficiency at the lowest cost. Get the facts for your problem. *Write for Catalog No. 372.*

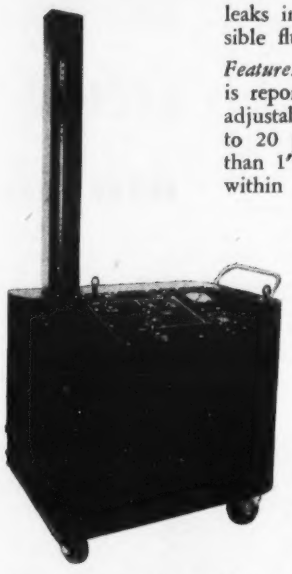
American dustube COLLECTORS

WHEELABRATOR & EQUIPMENT CORP.
478 S. Byrkit St. Mishawaka, Indiana

When inquiring check CP 8633 on handy form, pgs. 2-3

Portable leak testing machine to catch minute flaws in fluid systems . . .

adjustable throughout 0 to 20 psi within less than 1″ H_2O: repeatable within 2″ H_2O



Leak detector can be moved from one location to another

Uses: For detecting small leaks in complex or inaccessible fluid systems.

Features: Design of unit is reported to make it easily adjustable throughout the 0 to 20 psi range within less than 1″ H_2O and repeatable within 2″ H_2O.

Description: Operating on the fall-in-air-pressure principle, the portable manometer leak testing machines are capable of close air pressure regulation. This is accomplished by the arrangement of the pilot loaded free diaphragm regulators, one set for pressure reduction and the other for relief. Regulators are in step at each setting. To prevent tampering with machine, the door is equipped with a receptacle for a card certifying the unit's pressure setting. A manual by-pass valve is used to fill the receptacle to be tested and a relief regulator is set to relieve the full by-pass valve capacity at a pressure not more than 10″ H_2O above the desired delivery pressure. Upon closing manual by-pass valve, the delivery pressure returns to exact setting of machine. Portable cabinets are made of welded sheet steel and mounted on rubber-tired casters.

(Product of Device Engineering Co., 1701 Walnut St., Philadelphia 3, Pa. . . . or for more information check CP 8634 on convenient Reader Service slip, pages 2 and 3.)

"Around the corner" drive powers deep well pumps from any motor . . .

70 hp accommodated by present models, larger one planned for early production

Uses: Primarily designed for operating deep well pumps in locations where electricity is not available or where gas can be economically used for power.

Features: Right angle gear drive permits use of gas, diesel, or gasoline engine power up to 70 hp.

Description: Drive is universally adapted to any vertical pump. Holloshaft is adjustable to take up stretch in pump shaft and reverse protection clutch prevents pump shaft from becoming unscrewed in case of torque reversal. Back-spinning when engine

You can't beat TAYLOR COMPARATORS

for ACCURACY

Liquid color standards are unconditionally guaranteed against fading.

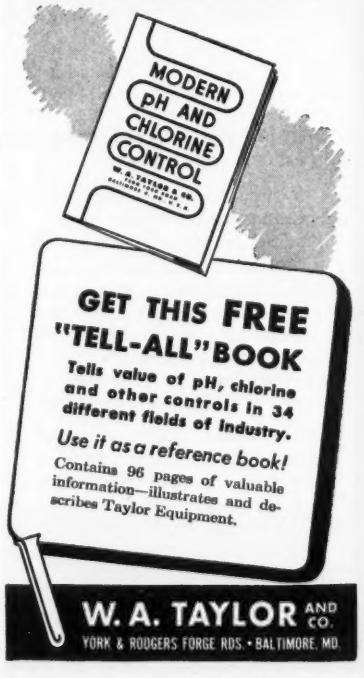
for SPEED

Simple 3 step method requires less than one minute to make reading

for PHOSPHATE, pH, CHLORINE DETERMINATIONS

Compact, easy to use, no fragile standards to handle. Many slides can be used on same base.

SEE YOUR DEALER...OR WRITE DIRECT FOR COMPLETE INFORMATION ABOUT THESE WIDELY USED COMPARATORS

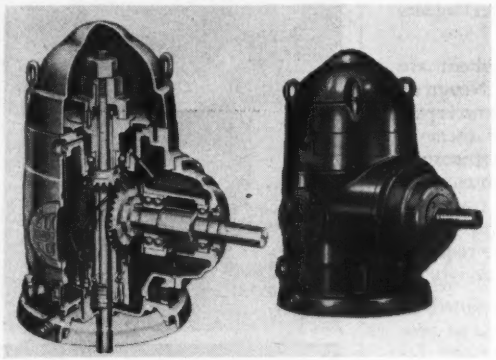

MODERN
pH AND
CHLORINE
CONTROL
GET THIS FREE
"TELL-ALL" BOOK
Tells value of pH, chlorine and other controls in 34 different fields of industry.
Use it as a reference book!
Contains 96 pages of valuable information—illustrates and describes Taylor Equipment.

W. A. TAYLOR AND CO.
YORK & RODGERS FORGE RDS. • BALTIMORE, MD.

When inquiring check CP 8635 on handy form, pgs. 2-3

stops is also prevented by built-in backstops available in two types.

Angle gear drives provide constant cycling of oil and this can be visually observed through a "lubri-peek" window and flush style oil gage. Operator can



Cutaway shows internal construction of right angle gear drive

view flow of oil from exterior. Thrust bearing, set in top, is easily accessible and can be removed without disturbing hollow shaft or gears. Tandem mounting of thrust bearings can be arranged to give higher thrust ratings for extra deep pump settings or where large water volume is delivered. Internal water cooling jacket keeps sealed oil at normal temp.

Exterior of gear drive is streamlined. All internal moving parts are completely sealed to prevent entrance of dust and moisture. Bevel gears are case hardened and designed with a tooth structure to reduce coefficient of friction.

(Holloshaft Right Angle Gear Drive is a product of U. S. Electrical Motors, Inc., Dept. CP, Box 2058, Los Angeles 54, Calif. . . . or for more information check CP 8636 on handy form, pages 2 and 3.)

Masonry saw is easily moved from job to job

Four models of masonry saw have been devised by manufacturer to meet the need for a lightweight, easily portable masonry saw, yet giving same efficiency and speed of cuts as heavier models. Weighing approximately 245 lb, one 14″ and one 12″ blade capacity models are designed for wet or dry cutting: the other 14″ and 12″ models are designed for dry cutting. Latter may be converted to wet cutting by conversion kit.

All welded machines are primarily built of aircraft tubular steel. The 14″ models are equipped with 1½ hp motors, while 12″ models have 1 hp motors. Provision is made for accessory wheels allowing easy movement on the job. Wet cutting models have a self-contained water system and self-priming pump.

(Product of Champion Manufacturing Co., Dept. CP, 2028 Washington Ave., St. Louis 3, Mo. . . . or for more information check CP 8637 on handy form, pages 2 and 3.)

Only POLYKEN PROTECTIVE COATINGS fight corrosion these 2 ways in a single wrap

12 mils of protection . . . In this magnified cross sectional drawing note how the heavy adhesive mass actually penetrates metal porosity—fills pits and voids.

Cover a pipe with Polyken Protective Tape Coating and, with just one simple operation, you have double protection, a stable adhesive and a *polyethylene* backing—each one an anti-corrosion barrier in itself.

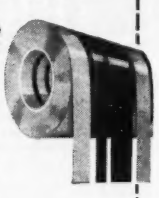
The first barrier of this coating is an extra heavy, 4 mil adhesive, which provides a superior bond to all metal surfaces as well as to its own backing. And this specially developed synthetic adhesive does more than form a tight bond—because of its thickness it actually penetrates a pipe's surface voids, pits and pores—fills them in with a material that provides excellent protection indefinitely over a wide range of temperatures and conditions.

The second barrier is a tough, elastic 8 mil *polyethylene* film, adding all the well-known properties of *polyethylene* to the protection already provided by the adhesive mass.

These two barriers, bonded together by a new process, is the solution to your corrosion problem. Polyken Protective Coatings are available in two colors: No. 900, black and No. 910, aluminum gray. Test samples and further information are available now.

TAILORED TO YOUR JOB

Polyken®



INDUSTRIAL TAPES

Department of Bauer & Black
Division of The Kendall Company

Polyken, Dept. CPC, 222 West Adams Street
Chicago 6, Illinois

Please send me samples and further information on POLYKEN PROTECTIVE TAPE COATINGS.

Name_____ Title_____

Company_____

Street Address_____

City_____ Zone____ State____

When inquiring check CP 8638 on handy form, pgs. 2-3

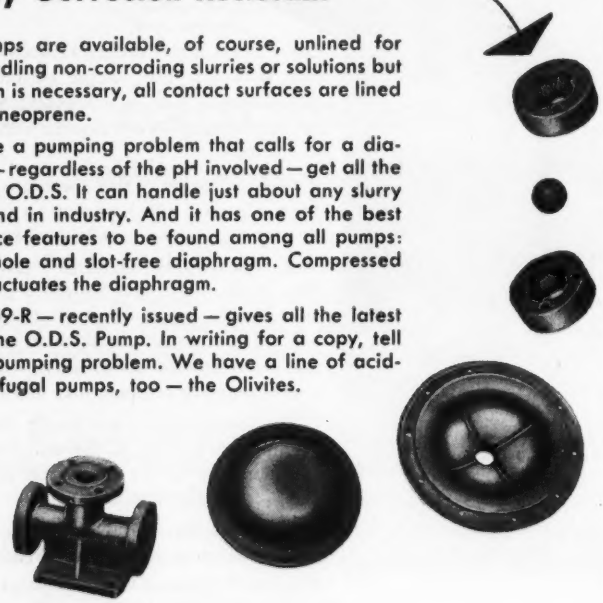
ODS Diaphragm SLURRY PUMP

Every Contact Inch Highly Corrosion Resistant

ODS Pumps are available, of course, unlined for handling non-corroding slurries or solutions but when protection is necessary, all contact surfaces are lined with rubber or neoprene.

So, if you have a pumping problem that calls for a diaphragm pump — regardless of the pH involved — get all the facts about the O.D.S. It can handle just about any slurry or solution found in industry. And it has one of the best low-maintenance features to be found among all pumps: a no-linkage, hole and slot-free diaphragm. Compressed air or vacuum actuates the diaphragm.

Our Bulletin 309-R — recently issued — gives all the latest details about the O.D.S. Pump. In writing for a copy, tell us about your pumping problem. We have a line of acid-handling centrifugal pumps, too — the Olivites.



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Melbourne
SOUTH AFRICA
E. L. Bateman Pty., Ltd.
Johannesburg, Transvaal

When inquiring check CP 8639 on handy form, pgs. 2-3

Light, tough overshoes are resistant to oil, chemicals . . .

elasticity of Neoprene material assures grip on shoes, insides wash easily

Uses: To protect shoes of those who work around oils, chemicals, solvents, acids, and other agents which damage ordinary rubbers.

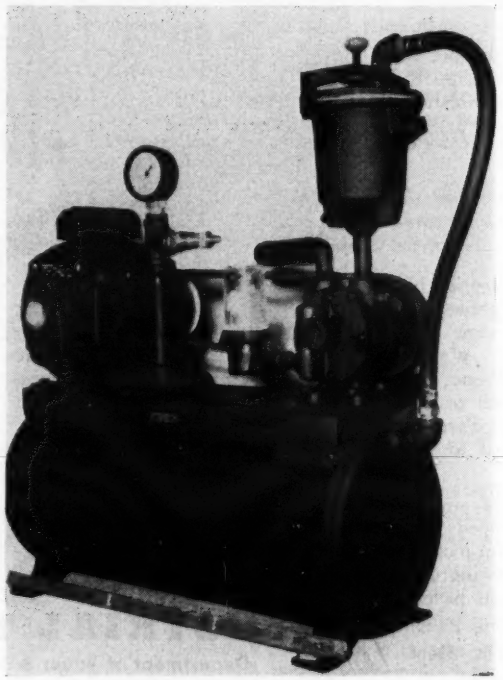
Features: Without fabric lining, overshoes are light (9 ounces apiece). Elasticity of Neoprene upper assures firm grip on shoes, so it won't pull off at the heel. Extra stretch also allows them to be worn on both workshoes and street shoes, in spite of workshoes' larger size. With the absence of lining, it is a simple matter to turn the overshoes inside out and sponge them or wash them should dirt or dust get inside. Only three sizes are required to care for virtually all shoe sizes from 6 through 12.

Description: Omission of fabric is reported to give the overshoes unusual elasticity, as well as providing for lighter weight. "Small" overshoe fits shoe sizes 6 to 8, "medium" fits sizes 9 to 9½, and "large" fits 9½ to 12.

(Manufacturer is Tingley Rubber Corp., Dept. CP, 903 Ross St., Rahway, N. J. . . . or for more information check CP 8640 on handy form, pages 2 and 3.)

Even if plant is congested there's room for compact vacuum pump . . .

tank-mounted 3.6 to 40 cfm oil-sealed rotary units provide steady "supply" of vacuum



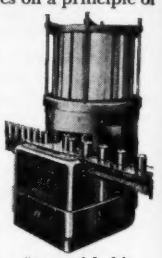
The 18" scale shown at the bottom of the tank illustrates the general size of vacuum pumps

VACUFLOW

POWDER FILLERS

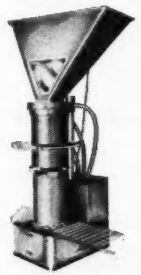
Cut Product Wastage. Vacuflow powder filling equipment operates on a principle of vacuum feeding, instead of pressure, to pack powder into a container.

Air is removed from the container to create a vacuum which draws a measured quantity of powder from the hopper. There is no problem with dust control, since the unique Vacuflow method simply does not involve air currents that cause dust.



Rotary Model

Semi-automatic models are available for filling containers ranging from the tiny talcum box up to and including 100 lb. paper bags and 200 lb. drums. Rotary models are available for automatic production of 5 lb. sizes or less at speed of 45 to 300 per minute.



Model E

Pneumatic is the one manufacturer in a position to furnish machines for making up complete production lines. Units are available for air cleaning, powder and liquid filling, capping and labeling a wide range of bottles, cans or jars.

PNEUMATIC SCALE CORP., LTD.
67 Newport Ave., Quincy 71, Mass.
Also: New York; Chicago; San Francisco; Los Angeles; Seattle; Leeds, England

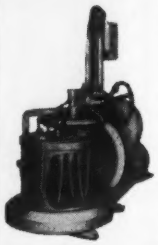
PNEUMATIC

When inquiring check CP 8641 on handy form, pgs. 2-3

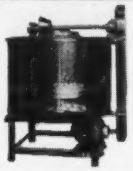
DURABILITY & DEPENDABLE SERVICE

Over 80 years of Ross experience in the manufacture of Mills and Mixers of all types assures the proper selection of equipment to fit your specific processing requirements.

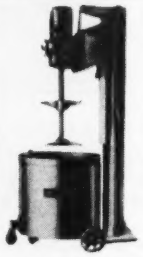
#36—LIQUID MIXER



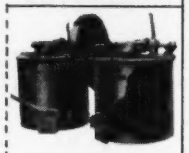
#30C—CHANGE CAN MIXER



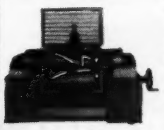
#36D—DRY MIXER



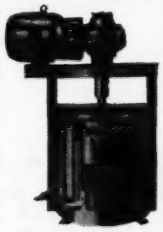
#131AB — CHANGE TANK MIXER



#36RM—TWIN SEMI-PASTE MIXER

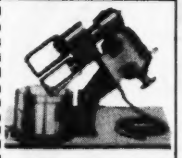


#41L—STEAM-JACKETED HEAVY DUTY KNEADER



#132—HEAVY DUTY PASTE MIXER

#42 — HORIZONTAL MIXER



#130EL—VARIABLE SPEED LABORATORY MIXER

Mixers available in laboratory, pilot scale, and large production sizes.

Write for further details!

CHARLES ROSS & SON COMPANY

154 CLASSON AVENUE
BROOKLYN 5, N. Y.

When inquiring check CP 8642 on handy form, pgs. 2-3

Uses: Designed for package evacuation, vacuum drawing of plastics, and general-duty use wherever evacuating pumps are required.

Features: Tank, mounted with pump, is kept evacuated so that vacuum is always available. Complete assembly, which comes ready for wiring, is compact, easy to install, and handy to use, even in congested working areas.

Description: Tank-mounted vacuum pumps range in capacities from 3.6 to 40 cfm. Included in the assembly are the tank, pump, air cleaner, vacuum gage, vacuum relief valve (for adjusting vacuum), and muffler. Pump is rotary oil-sealed type, designed for continuous operation. It may be provided with automatic cut-off switch, if desired.

(Series is offered by Squire-Cogswell Company, Dept. CP, 4140 N. Kedzie Ave., Chicago 18, Ill. . . . or reader may secure more information by checking CP 8643 on convenient Reader Service slip, between pages 2 and 3.)

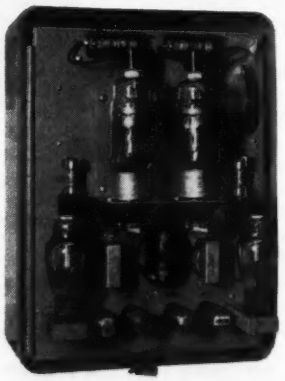
¾ to 3 hp drives are regulated by 15 x 18 x 12" package . . .

wide speed range selected by turning single knob on electronic, variable-speed drive

Uses: As adjustable speed drive to control testing machines, conveyors, variable volume or proportioning pumps, machine tools, etc.

Features: Selection of a wide range of speeds is accomplished by turning a single knob. Motor will accelerate to and hold any pre-set speed within plus or minus three per cent, regardless of ordinary changes in the load.

Description: According to manufacturer, electronic adjustable-speed drive offers stepless and preset speed control for ¾ to 3 hp drives. Thy-mo-trol drive panel measures 15 x 18 x 12½ inches and covers standard 5:1 and 20:1 ranges. Available in reversing and non-reversing forms, the simplified system consists of an anode transformer, electronic control panel, control station, and DC motor.



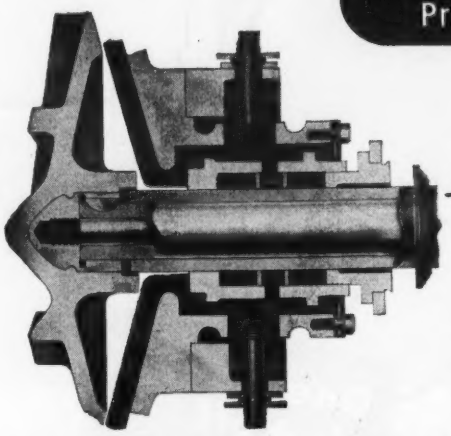
Packaged, variable speed drive measures only 15 x 18 x 12½ inches

It operates on 220/440 volts, single-phase 50/60 cycles. Dual rating of anode transformer makes it possible to use either voltage by merely changing primary connections.

(Adjustable-speed drives are manufactured by General Electric Co., Dept. CP, Schenectady 5, New York . . . or for more information check CP 8644 on convenient Reader Service slip, between pages two and three.)

OLIVITE
Acid-Handling PUMP

How It Answers the Problem of Leakage



Illustrated is the stuffing box assembly of the Olivite Acid-Handling Pump.

Since pump leakage is probably the Number 1 Enemy when handling corroding solutions, note how in the Olivite Pump, extra precautions are taken to prevent leakage:

1. The stuffing box floats on two rubber rings which permits shaft and packing movement. The packing is not crushed nor is the replaceable shaft sleeve scored.
2. The lantern ring permits circulation of the lubricant, water, solution, or grease.
3. The resilient packing is of acid-resisting material styled for long life.
4. Simple spring loaded wing nut adjustment permits application of correct and proper pressure by the yoke on the gland and packing. No "monkey" wrench required.

Thousands of Olivite Acid-Resisting pumps have been supplied the Process Industries during the past 20 odd years. The values of these years of design, manufacturing and operating experience are embodied in every 1¼", 2" or 4" Olivite Pump you purchase. Bulletin 308-R provides full details. When writing us please outline your pumping problems.

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When inquiring check CP 8645 on handy form, pgs. 2-3

ELLIOTT TWIN STRAINERS
give double-barreled protection

SIZES AND BASKET MESH TO SUIT THE NEED

Fourteen sizes—1" to 24". Basket perforations, 1/32" to ⅜". If finer mesh is desired, basket can be lined with wire cloth. You get the straining service you need with Twin Strainers.

There is practically never any need to shut down a Twin Strainer. It provides its own standby service, thrown into operation by the two-way valves which shut off the fouled chamber.

For over a generation, Twin Strainers have been standard equipment in many industries. Now redesigned with many maintenance-saving features. Get the facts —write for the Twin Strainer Bulletin.

A-317

ELLIOTT COMPANY
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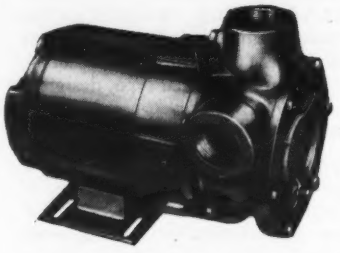
When inquiring check CP 8646 on handy form, pgs. 2-3

CONSTRUCTION

Close coupling makes pump-motor unit a small package

Coupling noise and misalignment troubles are reportedly avoided by integral design of Apco Turbine-type pumps. Smaller over-all size is also attributed to close-coupled



Installation simplified by four different positions for suction and discharge connections

design, and four different positions for suction and discharge connections provide installation flexibility.

Pump's cover, inner ring, and impeller (only wearing parts) are made of bronze for resistance to corrosion. Manufacturer reports high suction lifts (28′ at sea level) with reduced capacities beyond 22′. Since pumps handle vapor entrapped in liquid without losing prime, they will not vapor bind. They are available with mechanical seals in 3 to 30 gpm capacities and heads from 0 to 250′.

(Product of Aurora Pump Co., Dept. CP, 62 Loucks St., Aurora, Illinois . . . or for more information check CP 8647 on convenient Reader Service slip, between pages two and three.)

Lists specifications of radiant panels

Specifications of electric far-infrared radiant panels are outlined in 4-page bulletin. Twenty-four separate items are covered, including every component part and characteristic of the panels. Panels are suitable for heavy duty industrial heating, drying and curing operations.

Bul L-1093 is issued by Edwin L. Wiegand Co., Dept. CP 7500 Thomas Blvd.,Pittsburgh 8, Pennsylvania. When inquiring specify CP 8648 on convenient Reader Service slip, between pages two and three.

COMPLETE LINE for Lab and Plant

"Metalsmiths" Stainless Steel and Monel Utensils

Prompt shipment —anywhere!

Order your next requirements in corrosion-resistant utensils from the extensive "Metalsmiths" line. Get latest catalog covering sizes and prices of all items shown, plus beakers, stock pots, batch cans and shovels. Buy "Metalsmiths" and compare workmanship, quality, durability.

WRITE FOR LATEST CATALOG — PRICE LIST

METALSMITHS
Division of Orange Roller Bearing Co., Inc.
556 White Street Orange, N.J.

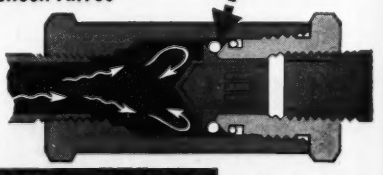
When inquiring check CP 8649 on handy form, pgs. 2-3

LEAKPROOF CHECK VALVES
At Last!

THE "CIRCLE-SEAL" PRINCIPLE
utilizing a resilient "O" ring floating between conical seats enables us to provide "dead-tight" sealing—plus the assurance of unprecedented, maintenance-free service life and precision performance never before offered.

CIRCLE SEAL
precision check valves

- VACUUM BREAKERS
- SENSITIVE LOW PRESSURE VENT OR RELIEF VALVES



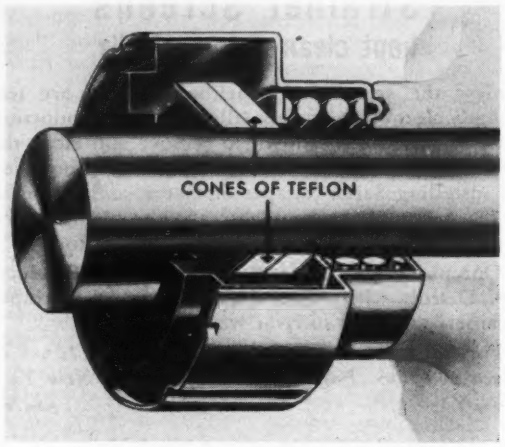
JAMES-POND-CLARK
2181 E. Foothill Blvd. • Pasadena 8, Calif.

Engineering data sent free of charge on request.

When inquiring check CP 8650 on handy form, pgs. 2-3

Teflon component adds life to mechanical seal for rotary shafts

Long service performance in small pumps, hot water circulators, and other rotary shaft applications is reported for manufacturer's Type 19 mechanical seal. Beveled cones made of Teflon (DuPont Trademark for tetrafluoroethylene resin) are utilized as seal's flexible member to adapt it for efficient service



Teflon cones function as the flexible members of mechanical seal for rotary shafts

involving: 1) water, oils, corrosives, or acids; 2) temperatures from −100° to +450°F; 3) vacuums and pressures to 200 psi; and 4) high shaft speeds.

Available in sizes to fit shaft diameters of ¼, ⅜, ½, ⅝, and ¾ inches, the packaged type seal is said to be easily and quickly installed. Metallurgy of seal can be specified to meet operating conditions.

(John Crane Type 19 seal is manufactured by Crane Packing Co., Dept. CP, 1800 Cuyler Ave., Chicago 13, Ill. . . . or for more information check CP 8651 on handy form, pages 2 and 3.)

Informative booklet suggests how to combat corrosion

Made of close-woven fabric saturated in coal tar with an even thickness of coating on both sides of the tape, coating provides corrosion-resistant protection of coal tar in convenient form. No additional adhesives are needed to assure a bond to the surface. The coal tar serves as both bond and protection. In addition to being resistant to moisture, acids, alkalis, soil stress, electrolysis, chemical fumes, fly ash and other severe conditions, material withstands hard usage and abrasive conditions.

Applications and specifications of coal tar protective coating in handy tape form are given in 8-page, illustrated bulletin. "Where to Use Coal Tar Protection" is issued by The Tapecoat Co., Dept. CP, 1523 Lyons St., Evanston, Ill. When inquiring specify CP 8652 on form, pgs. 2-3.

Foiling the beetle with the half-billion bite!

$500,000,000—that's what those little beetles on the cotton plant above cost America in 1950. The boll weevil adds a whopping $10.00 a year to the price every one of us pays for cotton goods. Producing four to five generations a season, the female boll weevil first destroys the flower buds of the cotton plant by laying her eggs in them; later generations deposit their eggs in the cotton bolls, where the greedy grubs raise havoc with the silky cotton fibers. The boll weevil is probably the most destructive of all insect pests, and has forced large agricultural areas to abandon the growing of cotton altogether.

Today our most effective weapon against this pest is the new insecticide BHC (benzene hexachloride). So great is the demand for it that the production of BHC increased 300% last year and now equals or exceeds that of any other insecticide. BHC is produced by the controlled chlorination of benzene by means of a catalyst. Its commercial production is made more difficult by the corrosive qualities of the basic ingredients and the temperatures at which the catalyst operates. To handle these corrosives effectively, processors of this insecticide use many ALOYCO corrosion-resistant valves in the plants where they make BHC. Like the makers of benzene hexachloride, manufacturers of other insecticides such as DDT, Toxaphene, Rotenone, arsenates, and fluorides also depend upon ALOYCO valves for the protection of their products.

ALOYCO valves are supplied in stainless steel and other corrosion-resistant alloys by the Alloy Steel Products Company, Inc., the world's largest specialists in valves for corrosive service. Such concentration has developed a practical knowledge of the chemistry of corrosion, and produced the metallurgical and mechanical know-how to combat it. That's why ALOYCO corrosion-resistant valves are used by many leading firms in the chemical field . . . to handle anything from acetic acid to zirconium tetrachloride.

ALOYCO valves go hand-in-hand with chemical progress.

If corrosives play a part in your business it would pay you to bring your problems of corrosion, contamination, discoloration, or temperature extremes to the *Aloyco Corrosion Engineering Service*. Our engineers and metallurgists will be glad to pre-test various alloys under actual line conditions; our long and diversified experience in this field is available to assist you in selecting the correct valves and alloys to meet your particular requirements. Write us about your own corrosive problems. 3.7

Longer Lasting
ALOYCO VALVES
1st in Corrosive Service

ALLOY STEEL PRODUCTS CO., INC.
1302 West Elizabeth Avenue, Linden, N. J.
Plants: Linden, N. J.; Bloomfield, N. J.; Elizabeth, N. J.

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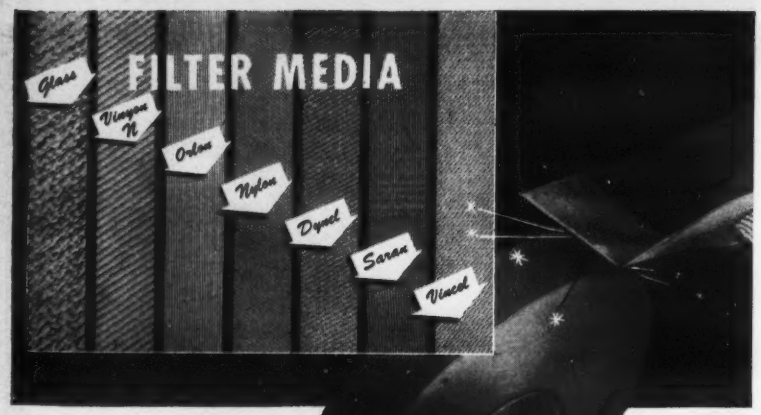
LOS ANGELES 22, CALIF. 5442 Jillson St.

When inquiring check CP 8653 on handy form, pgs. 2-3



NO AX TO GRIND HERE!

We Manufacture All Types of
FILTER CLOTH

NYLON
COTTON
GLASS
ORLON** acrylic fiber
DYNEL
VINCEL***
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VINYON N*
RUBBER COVERED SCREENS

*T.M.—Union Carbide & Chemical Co.
**T.M.—E. I. du Pont de Nemours Co.
***T.M.—Reg. U.S. Pat. Off.

As manufacturers of an extensive line of Filter Cloths our analysis of and recommendations for your filter cloth problems will be unbiased...we have "no ax to grind" regarding any particular cloth.

Each of the cloths listed above offers different operating advantages. Each type has its own range of chemical resistance, its own temperature limits and its own degree of resistance to moisture, molds, fungi and bacteria. With such a variety we are in position to recommend a filter cloth that will give you the best service for your particular application.

In writing for literature and test samples please tell us about your problem.

Weavers of Industrial Filter Media for over Forty Years

NFM **The National Filter Media Corp.**

General Offices & Mills: New Haven 14, Conn.
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When inquiring check CP 8654 on handy form, pgs. 2-3

Easy application results with non-flowing type of roof coating . . .

does not oxidize rapidly when exposed to weather

"Static" or non-flowing type of roof coating, such as improved fibrated asphalt emulsion, is said to be especially easy to apply by brush or spray. Because of its non-flowing characteristics, it is as useful on pitched roofs as it is on those having a flat surface. Material will not become brittle in low temperatures and does not oxidize rapidly when exposed to weather. It has no tendency to run, sag, or "alligator" when subjected to the hot sun.

Once a surface is coated with product, the water vehicle evaporates and the minute particles of asphalt fuse to form a continuous film. This film has the pliability and high exposure resistance of the original asphalt. Coating can be applied over almost any type of roof and can be obtained from manufacturer both in fibrated and non-fibrated consistencies.

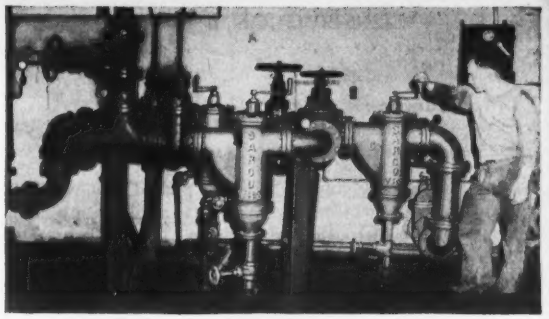
While the material is a water emulsion, once the water has evaporated after application, the coating becomes highly water resistant. In addition to its primary use for roof surfacing, certain types of the product may be adopted for protection of other structural surfaces to provide resistance to weather and rust.

(Certified Emulsion roof coating is product of United Laboratories, Dept. CP, 16801 Euclid Ave., Cleveland 12, Ohio . . . or for more information check CP 8655 on handy form, pages 2 and 3.)

Valve specifications given in manual

Over 50,000 postings of figures, names and descriptions are included in revised loose-leaf manual which compares valves of twenty leading manufacturers. Comparison is made by material, type; pressure rating and structural variations. Sizes of cast steel and forged steel valves are included in manual.

To obtain valve comparison manual remit $21.50 direct to Equivalent Valves Co., Dept. CP, 115 W. 7th St., Los Angeles 14, Calif.



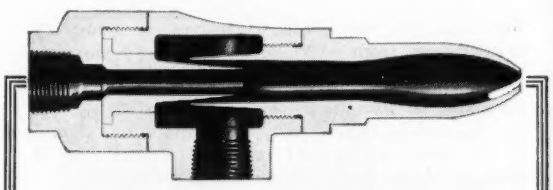
Strainer Screens
kept clean automatically

Unless the screens of pipeline strainers are frequently cleaned, they eventually clog. The production time lost by the shutdown to remove and clean the choked screen, and the labor involved, can be saved by installing Sarco Scraper Strainers, as illustrated. A few turns of the handle scrape the inside of the screen clean and assure continuous operation.

Our photo was taken at Monroe Paper Products Co., Detroit, where three 6″ Sarco type VRS scraper strainers take care of river water.

For full information write for Bulletin 1225-4 to *Sarco Company, Inc., Empire State Bldg., New York 1, N. Y.* *Advt. 617*

When inquiring check CP 8656 on handy form, pgs. 2-3



COMPLETE COMBUSTION
of HEAVY FUEL OILS and TARS
With
TYPE "SA" OIL BURNER

The popular NATIONAL AIROIL Steam Atomizing Oil Burner *thoroughly atomizes and completely burns* the lowest and cheapest grades of fuel oil or tar . . . requires minimum supervision and maintenance. Only slight oil pressure and temperature is needed . . . and internal atomizing venturi feature assures low steam consumption.

NATIONAL AIROIL Type "SA" Oil Burner is equally adaptable to all types of industrial heating, power or process furnaces . . . is suitable for firing above stoker grates on conversion to oil.

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NATIONAL AIROIL has a complete line of Oil and Gas Burners and Furnace Equipment to meet your every requirement.

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When inquiring check CP 8657 on handy form, pgs. 2-3

Compactness, efficiency provided by close-coupling pumps to electric motors . . .

leakage is prevented in pump-motor units by mechanical shaft seal

Uses: For air conditioning and miscellaneous industrial applications. Unit is designed for horizontal, vertical, or intermediate angle installation.

Features: Combining a pump and an electric motor into a single unit furnishes compactness and efficiency. Bellows type mechanical seal permanently seals shaft against leakage. It is simple to install and self-adjusting for wear.

Description: Pump section of pump-motor unit has threaded suction and discharge and cast iron volute casing. Casing can be rotated to any one of four positions of 90° spacing. Enclosed bronze propeller is accurately machined and balanced to insure freedom from vibration. It is threaded to fit on motor shaft.

Continuous duty jet motor has standard NEMA dimensions. It is equipped with grease sealed bearings and stainless steel shaft. Motor is available in single or three-phase, 1750 or 3450 rpm.

Open drip-proof motors are standard, but totally-enclosed or explosion-proof units can be obtained. Single phase motors have thermal overload protection. Pump-motor can be easily disassembled for examination.

(Model B Electropump is product of Carver Pump Co., Dept. CP, Muscatine, Iowa . . . or for more information check CP 8658 on handy form, pages 2 and 3.)

Speed of belt-driven blower can be varied to meet changing needs . . .

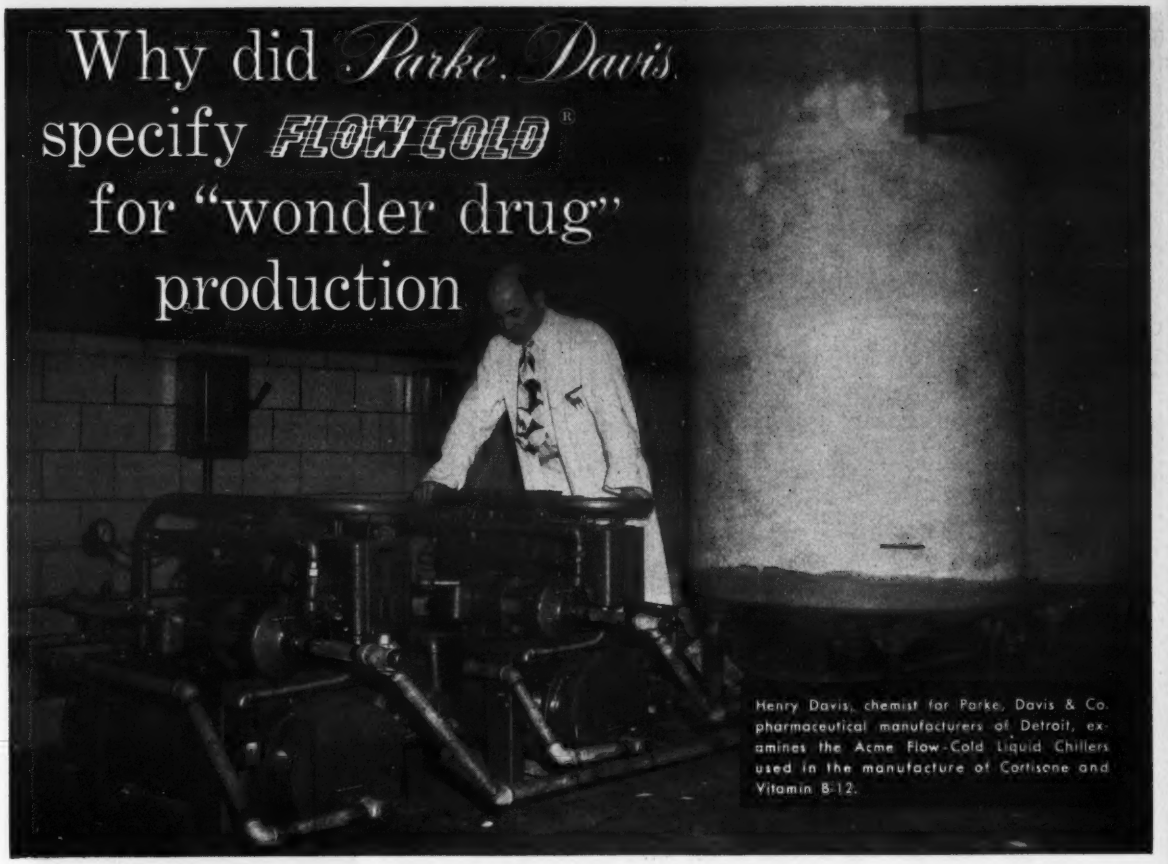
dynamically balanced wheels eliminate vibration and insure quiet operation

Belt-driven blowers added to manufacturer's line of propeller-type fans and blowers are equipped with an adjustable motor pulley to provide variations in speed to meet changing pressure and volume requirements. Wheels on the centrifugal units are dynamically balanced to eliminate vibration and insure quiet operation.

Blowers are available with either clockwise or counterclockwise rotation. Housings can be easily rotated at time of installation to any of eight discharge positions. Sizes from 9 to 30" can be furnished.

Units can be supplied with motors to meet all current characteristics and special operational requirements. Weather-proof drive cover can be furnished if desired. This makes it unnecessary to provide penthouse or other special protection on outside installations.

(Product of Hartzell Propeller Fan Co., Dept. CP, Piqua, Ohio . . . or for more information check CP 8659 on convenient Reader Service slip, between pages two and three.)


Why did Parke, Davis specify FLOW-COLD® for "wonder drug" production
Henry Davis, chemist for Parke, Davis & Co. pharmaceutical manufacturers of Detroit, examines the Acme Flow-Cold Liquid Chillers used in the manufacture of Cortisone and Vitamin B-12.

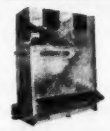
Acme's packaged liquid chillers provide efficient operation with lower installation and maintenance costs

Throughout the manufacturing process of the new "wonder drugs" — cortisone, eschatin, and Vitamin B-12 — modern industrial refrigeration plays an important role. At one phase two Acme Flow-Cold Packaged Liquid Chillers (3 h.p. capacity) hold 15 gallons of alcohol per minute at a constant 35 degree Fahrenheit temperature. Later in the process another Acme Flow-Cold maintains an ethylene glycol solution at a minus 10 degrees Fahrenheit.

Parke-Davis selected Acme Flow-Cold Chillers because of the time and money that could be saved in building the system. Each Acme Flow-Cold is shipped from the factory completely assembled and pre-tested. Installation of a complete chilling system is accomplished in a matter of hours. These installations were so successful Parke-Davis reordered more Flow-Cold units to control the temperatures of other chemical processes.

Write today for catalog FC1-CP.

ACME INDUSTRIES, INC.
JACKSON, MICHIGAN
Mfgs. of a complete line of Air Conditioning and Refrigeration Equipment


Evaporative Condensers
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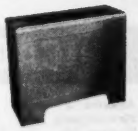
Direct Expansion (Dry-Ex) and Flooded Liquid Chillers
Heat Exchangers, Oil Separators

Shell and Tube, Shell and Coil Condensers
Receivers, Pipe Coils

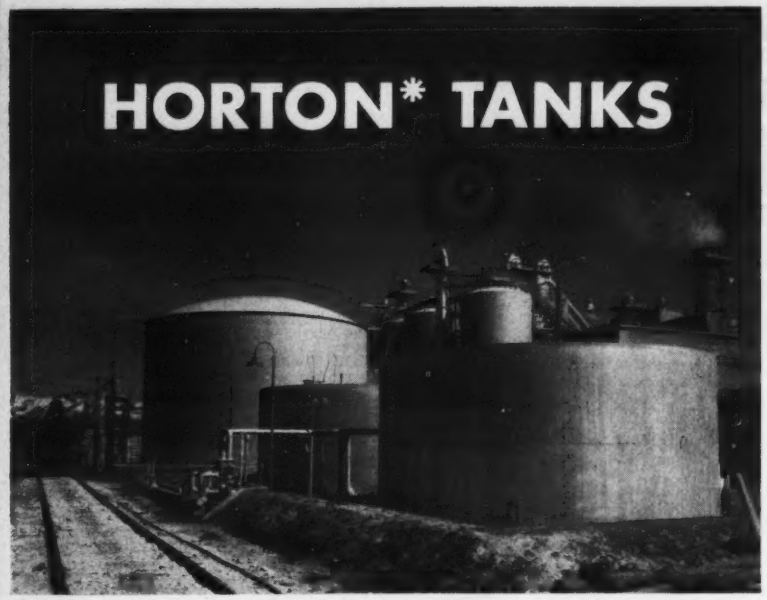
Packaged Liquid Chillers to 225 tons

Flow-Temp Heat Pumps
Flow-Cold Liquid Chillers


Convectors for Heating and Cooling

Continuously serving the refrigeration and air conditioning industry since 1919

When inquiring check CP 8660 on handy form, pgs. 2-3



HORTON* TANKS

store fuel oil and acid for catalyst manufacturer

The Filtrol Corporation manufactures petroleum cracking catalysts of both the fluid and pelleted type at its new plant in Salt Lake City, Utah. These catalysts are shipped in bulk to all parts of the United States.

Salt Lake City was selected as the location for the plant primarily because basic raw materials for the catalysts are abundantly available in that area. This new plant was completed in December, 1950, and placed in operation in January, 1951.

In the foreground above are two 25-ft. diam. by 12-ft. Horton tanks used for storing fuel oil at the Filtrol plant. The third tank is a 225,000-gal. Horton tank, 40-ft. diam. by 24-ft., used to store sulphuric acid. Specially designed cone tanks used to store finished products appear in the background.

Chicago Bridge & Iron Company has complete facilities to design, fabricate and erect structures from carbon steel or corrosion-resistant materials including clad or lined structures. We have facilities for x-raying and stress relieving shop built vessels and for pickling and painting fabricated steel plate work by the Horton Phosphoric Acid Process.

Write our nearest office for information or quotations the next time you need steel plate or corrosion-resistant structures of any kind. There is no obligation on your part.

** Trade Mark Registered in U. S. Patent Office*

CHICAGO BRIDGE & IRON COMPANY

Atlanta 3 ..... 2107 Healey Bldg.
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Boston 10 .... 1007—201 Devonshire St.
Chicago 4 ..... 2116 McCormick Bldg.
Cleveland 15 ..... 2212 Midland Bldg.
Detroit 26 ..... 1535 Lafeyette Bldg.
Havana ..... 402 Abreu Bldg.
Houston 2 ..... 2151 C & I Life Bldg.
Los Angeles 17 . 1536 General Petroleum Bldg.
New York 6 ... 3314—165 Broadway Bldg.
Philadelphia 3 . 1650—1700 Walnut St., Bldg.
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Seattle 1 ..... 1307 Henry Bldg
Tulsa 3 ..... 1649 Hunt Bldg.

Plants at BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.

When inquiring check CP 8661 on handy form, pgs. 2-3

Bench convenience for cleaning small parts speeds process

Uses: When attached to a bench convenient to machine operator, plunger-type parts-cleaning can enables him to clean small parts as they come from the machine, make micrometer checks, or other necessary inspection.

Features: Unit occupies no bench top surface, since it is hooked to side of bench close to the machine and operator. Saves operator time,

Speeds cleaning, inspecting of small parts

saves cleansing agent through less evaporation loss and reduces fatigue. Proximity allows inspection without stopping the machine, spoilage is reduced.

Description: Unit is a sturdy, terne plate, seam welded rectangular container 10 x 7 x 8" deep and has 2 gal capacity for solvent or cleansing agent. A metal-perforated plunger dasher completely covers the opening.

Parts are placed on the dasher as they come from the machine; pressure on the dasher immerses them into the solvent for quick removal of oil, grease, and minute metal particles. Upon release, excess solvent drains down into the body of the container and parts are then ready for inspection.

Hinged cover folds back against the container to be completely out of the way during use. When machine is not operating, cover is closed to eliminate or minimize loss of solvent through evaporation.

Another feature is that the can is self-extinguishing. Dasher itself

ACE-HIDE

UNBREAKABLE RUBBER-PLASTIC 3-GAL. PAIL

3-GAL. PAIL

1-QUART DIPPER

For handling corrosive solutions. Tough, resilient, practically indestructible. Made of a new synthetic rubber-base material called ACE-HIDE, unaffected by most acids and alkalies. Drip-proof spout pours easily directed stream. Graduated scale inside pail. ORDER NOW from your rubber goods distributor, or write us.

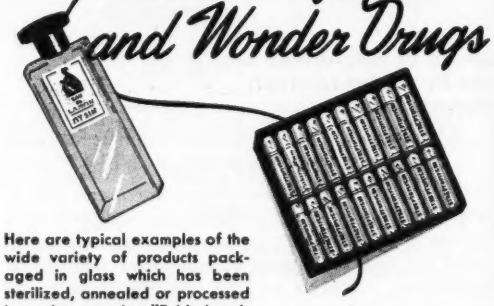
ACE rubber and plastic products

AMERICAN HARD RUBBER COMPANY

93 Worth St., New York 13, N. Y.

When inquiring check CP 8662 on handy form, pgs. 2-3

Exotic Perfumes... and Wonder Drugs



Here are typical examples of the wide variety of products packaged in glass which has been sterilized, annealed or processed in equipment using "Folded-and-Formed" Heating Elements . . . proof of both their versatility and wide acceptance.

"Folded-and-Formed" HEATING ELEMENTS

STANDARD RACKS, 12" x 12", grouped to provide any desired K.W. CUSTOMBUILT RACKS, in a variety of sizes, up to 600 K.W. per bank. SPECIAL RACKS, up to 10'x 10'.

What is YOUR heating problem?

REN INC

Electrically Heated Industrial Equipment

235 LEVERINGTON AVE PHILA 27 PA

When inquiring check CP 8663 on handy form, pgs. 2-3

TROUBLED WITH

RUST? CORROSION? from CHEMICAL FUMES?

Investigate WILBUR & WILLIAMS problem-solving finishes.

In the chemical field, particularly,

TOTRUST INSTANT DRY ENAMEL SYSTEM

has added years of life and beauty to previously unsightly and deteriorating fixtures and equipment.

Your Answer to ALL Metal Painting — on Rusted, Clean, New, Old, Damp, Dry, Painted or Unpainted, Interior or Exterior surfaces — including Galvanized and Aluminum.

1. Dries in MINUTES (not Hours).
2. Highly Resistant to Chemicals.
3. Extremely Tough for Heavy Duty, yet not Brittle.
4. Brush or Spray, Free Flowing . . . 24 COLORS

SEND TODAY for Color Sheet and Bulletin 353P

THE WILBUR & WILLIAMS COMPANY
BOSTON 35, MASS.

When inquiring check CP 8664 on handy form, pgs. 2-3

acts as a flame arrester. In case of fire on the surface, the surface film of the flammable solvent vaporizes, mixes with air and burns off.

(Development of The Protectoseal Co., Dept. CP, 1920 S. Western Ave., Chicago 8, Ill. . . . or for more information check CP 8665 on handy Reader Service slip, pages 2 and 3.)

Resiliency of packing is improved . . .

results in a better seal and longer life

Greater resiliency, resulting in a better seal and longer life, has been imparted to white braided asbestos Teflon impregnated packing by a different type of construction. A

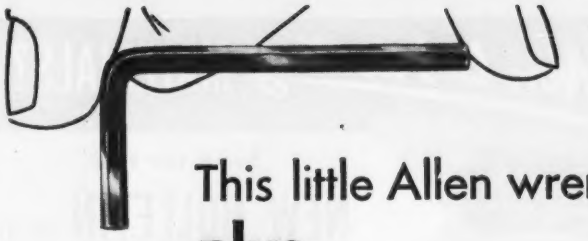
Improvement in packing is most pronounced when used in centrifugal acid pumps

braided or twisted core of Teflon impregnated glass fiber is employed. Over this is braided several jackets of asbestos yarn also impregnated with Teflon.

Improvement is said to be most pronounced on high speed centrifugal acid pumps. On this application, solid braided Teflon impregnated packing had a tendency to heat up due to its lack of resiliency.

Recently developed construction produces a packing which is almost rubber like in the larger sizes. Laboratory and field tests also indicate that the packing has increased acid resistance.

(Product of Flexrock Co., Dept. CP, 3611 Filbert St., Philadelphia 4, Pennsylvania . . . or for more information check CP 8666 on handy Reader Service slip, pages two and three.)



This little Allen wrench plus.....

Quikupl®

SAVED US 37% ON PIPING INSTALLATION COSTS

SAYS
CHARLES VOJIK
ASSISTANT SUPERINTENDENT
NEWS SYNDICATE CO., INC.

"Acid condensate draining through existing galvanized lines was eating its way right through the pipe wall. We knew the remedy to be stainless steel, but shut-down was costly and the job difficult, since it was practically all overhead work and ran through three floors.

Quikupl provided the answer. The entire job was completed in 18 hours and we had none of the headaches that go with threading, flaring or welding stainless steel. We estimate that Quikupl saved us 37% on installation, in addition to making a very simple job out of a tough one."

BULLETIN Q100

Get the full story of this amazing stainless steel fitting which permits quick assembly and disassembly of stainless pipes or tubing without threading, flaring or welding.

Write for Bulletin Q100 today.

THE COOPER ALLOY FOUNDRY CO. • HILLSIDE, NEW JERSEY

NAME _____

POSITION _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

When inquiring check CP 8667 on handy form, pgs. 2-3

PUMP *Non-Lubricating* MATERIALS?

Send for this

NEW BULLETIN (SE-5)

illustrating, describing

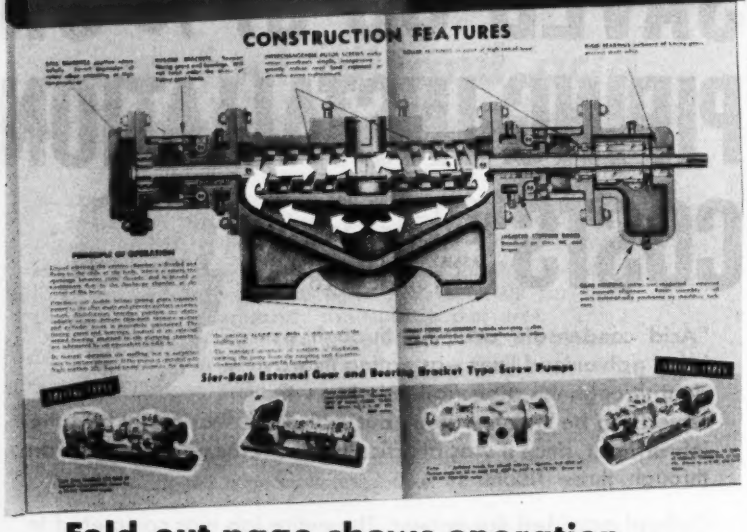
Sier-Bath

External Gear & Bearing

Bracket Type

SCREW PUMPS

NEW External Gear & Bearing BRACKET TYPE Sier-Bath SCREW PUMPS



Fold-out page shows operation... construction details... special types

- pump fuel oils, crude oils, cellulosics, distillates, etc.
- fluids and semi-fluids, 32 SSU to 1,000,000 SSU
- capacities 1-700 GPM
- discharge 1000 PSI for viscous liquids, 500 PSI for water

Sier-Bath "Gearex" and "Hydrex" Gear Pumps for lower pressures and capacities

Recently introduced, this Sier-Bath Pump incorporates all the latest refinements of screw pump design . . . and then some. *Center line support* speeds assembly . . . *single point alignment* eliminates rotor distortion . . . *radial and axial* control of rotors by heavy-duty bearings for sustained efficiency, long life. For the *whole* story . . .

SEND FOR BULLETIN SE-5

Sier-Bath GEAR & PUMP CO., Inc.
9260 Hudson Blvd.
North Bergen, N. J.

Founded 1905 Member A. O. N. A.

Also Manufacturers of Precision Gears and Flexible Gear Couplings

When inquiring check CP 8668 on handy form, pgs. 2-3

Emergency light works if regular power fails

Storage battery built into portable frame is used to power emergency lighting unit, which illuminates room if regular power fails. Without touching a switch, the 100

Emergency light responds instantly to power failure

candlepower sealed beam will light and remain lighted for ten hours or until regular power returns.

Installed simply by plugging into any AC outlet, light is intended to enable laboratory or similar operations to continue unimpeded. Trickle charger automatically maintains charge of battery, and built-in hydrometer indicates its condition.

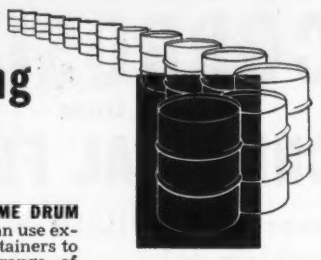
(Model E Emergency Lighting Unit is product of General Scientific Equipment Co., Dept. CP, 2700 W. Huntingdon St., Philadelphia 32, Pa. . . . or for more information check CP 8669 on handy form, pages 2 and 3.)

Shows range of ss products

Among stainless steel items illustrated in four-page bulletin outlining manufacturer's range of fabrication are: cylindrical steam-jacketed storage tank, 1650-gal tank for textile use, 16′ rectangular impregnating tank, 1950-gal rectangular tank for tannery dipping, and a textile saturator of small capacity.

Bul 153 is issued by Rodney Hunt Machine Co., Dept. CP, 53 Mill St., Orange, Mass. When inquiring specify CP 8670 on form, pages 2 and 3.

Get more use out of existing drums



With UNICHROME DRUM LININGS you can use existing steel containers to ship a wide range of chemical or edible products without corrosion or contamination. They keep drum interiors in such good condition that often it's also possible to *re-use* the drum. Three types available:

(1) Unichrome Series B-124 Linings are recognized as outstanding improvements to the already dependable family of phenolic coatings. (2) When lined with a Unichrome Series 4000 Plastisol Lining, ordinary steel drums get such protection they can sometimes be used in place of stainless. (3) Vinyl-base Unichrome Series B-154 Linings withstand many products which are strongly corrosive to containers and which attack ordinary coatings. Write us about *your* requirements.

UNICHROME COATINGS FOR METALS

Products of UNITED CHROMIUM, INCORPORATED

100 East 42nd St., New York 17, N. Y. • Detroit 20, Mich. • Waterbury 20, Conn.
Chicago 4, Ill. • Los Angeles 13, Calif. • In Canada: United Chromium Limited, Toronto, Ont.

When inquiring check CP 8671 on handy form, pgs. 2-3

Conn Industrial Mixers

Heavy Duty Mixer with Stuffing Box

Standard and special design mixers.

Tanks and agitators.

Alloy or steel.

1/3 to 100 horsepower.

Variable speed mixers.

Write for bulletin 521.

Conn and Company

Designers and Manufacturers
13 S. Marion St., Warren, Pa.

When inquiring check CP 8672 on handy form, pgs. 2-3

Combination conductor-insulator moves heat away from nose to cool welding . . .

welding electrode holder has copper core with glass cloth covering to carry heat away

Uses: Electrode holder has 400 ampere capacity.

Features: Holder is designed to carry heat away from nose. Manufacturer reports that in one test it remained cool enough to weld with bare hands when using 400 amperes.

Description: Jaws of holder are covered by special insulating construction. Copper core is located between 4 and 6 layers of laminated glass cloth. Copper conducts heat away so it does not concentrate in the nose causing deterioration of the insulation. Insulation, in turn, can continue to act as reinforcement. Jaws are also made of highly conductive metal of a non-spatter type. They will accommodate electrodes from 1/8 to 5/16 inches in size and open wide to permit fast release of stubs.

Current carrying time parts are made up of pure copper for high conductivity. Steel reinforcement increases rigidity in strength of the frame. Frame insulation is covered with copper sheathing to protect insulation from heat and spatter and to keep holder cool enough for comfort by carrying away heat. Holder handle is perforated, providing ventilation for heating caused by induced currents when welding AC. Handle is unbreakable.

(Cooltong Electrode Holder is a product of The Lincoln Electric Co., Dept. CP, 22801 St. Clair Ave., Cleveland 17, Ohio . . . or for more information check CP 8673 on handy form, pages 2 and 3.)

Gives many specs and photos of herringbone gear drives

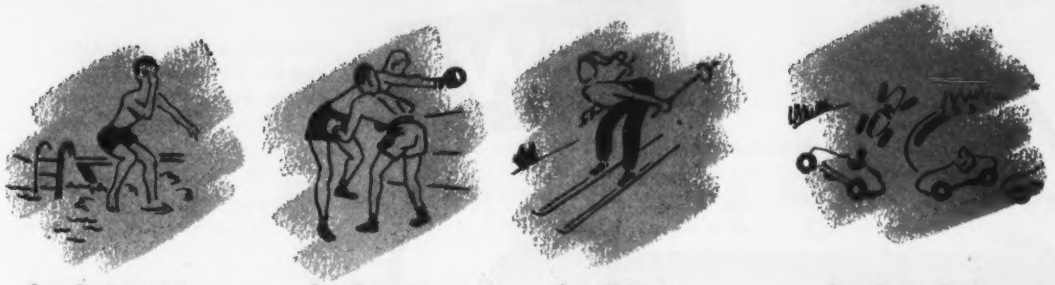
Installation photographs in 36-page bulletin show examples of manufacturer's single, double and triple reduction enclosed herringbone gear drives in many types of heavy duty service. Drives are widely used to transmit power at required speeds to conveyors, line shafts, blowers, pumps, agitators, hoists, machine tools, processing machines and other industrial equipment.

Data and specifications fill over one-half the publication. Ratings for input speeds of 720 to 1750 rpm are given for all drive sizes. Complete instructions for correct selection are provided, including overhung load tables and a table listing load classes for 170 types of machines. Listed are 39 sizes of drives in 534 standard ratios, from 2.84:1 to 326:1. Capacities range from 0.4 to 2480 hp, and output shaft speeds range from 2.2 to 623 rpm.

Standardized packaged drives, with motor, baseplate, geared coupling and single, double or triple herringbone gear drive, are listed with dimensions and NEMA motor frame numbers.

Book 2519 is issued by Link-Belt Co., Dept. CP, 307 N. Michigan Ave., Chicago 1, Ill. When inquiring specify CP 8674 on handy form, pgs. 2-3.

AERATION AGITATION SLIPPAGE RECIRCULATION



for Swimmers... for Boxers... for Skiers... for Auto Racers...

but POSITIVE DISPLACEMENT for *Product Pumping*

Waukesha P. D. PUMP

● High "Buzz-Saw" speed is not essential to overcome high pressure in product pumping. The higher the speed, in fact, the greater the turbulence created, with resultant churning, agitation and aeration of your product. That is why the slow-speed Positive Displacement principle of Waukesha Sanitary Pumps is best protection for your product. Through its gentle action, large open chambers, positive twin blade impeller action, there's no chance of product damage or waste.

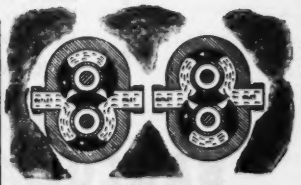
For dependable transmission of your product through high heads, regardless of its viscosity, use Waukesha Pumps. They provide best protection — the most important part of your entire product processing operation. Write for details on the use of Waukesha Slow Speed Sanitary Pumps for this purpose in your plant.

Waukesha 100% SANITARY PUMPS
Dependable Product of a Responsible Manufacturer

Check these Exclusive features:

FASTER CLEANING — Streamlined design, eliminating all dirt-catching crevices inside and outside — plus simple disassembly — saves clean-up time and labor.

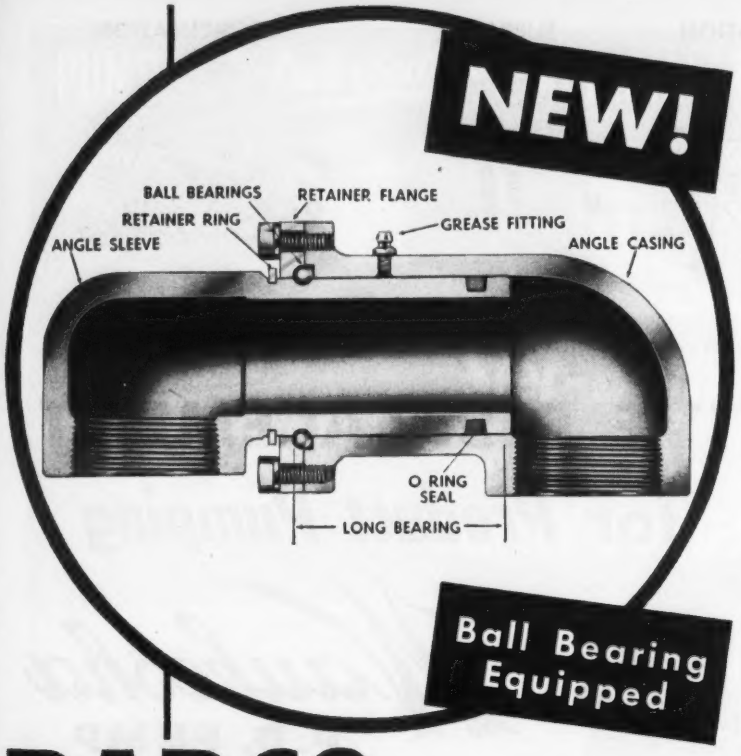
LONGER SERVICE-LIFE — Fewer working parts, plus Waukesha's One-Piece O-Ring Sanitary Seal, and Standard Reconditioning Plan, mean longer trouble-free service.



CORROSION-RESISTANT METAL — all product contact parts are of Sanitary "Waukesha Metal" or Stainless Steel. Easy to clean, leaves no metallic flavor

WAUKESHA FOUNDRY COMPANY • WAUKESHA, WISCONSIN

When inquiring check CP 8675 on handy form, pgs. 2-3



BARCO SWING JOINTS

FOR LOADING AND UNLOADING LINES

HERE is Barco's new, attractively priced, all-steel ball bearing *Swing Joint* designed specifically to provide for movement and flexibility in metal pipe loading or unloading lines handling petro-chemicals, oil, alcohol, and other fluids.

11 DIFFERENT STYLES—The Barco line is complete with single swing, double swing, and counter-balance styles to meet every need! Sizes 2", 2½", 3", 4".

SUPERIOR DESIGN—In Barco Swing Joints, *the ball bearings do not fall out when joints are taken apart!* Long bearing provides adequate pipe support. Special O-ring seal insures leakproof service over wide temperature range, −40° F. to +225° F.

EASY MAINTENANCE—Joints can be disassembled for inspection without disconnecting piping. O-rings are easily renewable in the field.

INFORMATION—Send for latest Catalog No. 400 containing engineering and ordering information. *Worldwide sales and service.*

BARCO *Manufacturing Co.*

537 D Hough St. **Barrington, Illinois**

In Canada: **The Holden Co., Ltd., Montreal**

The Only Truly Complete Line of Flexible Ball, Swivel, Swing, and Revolving Joints

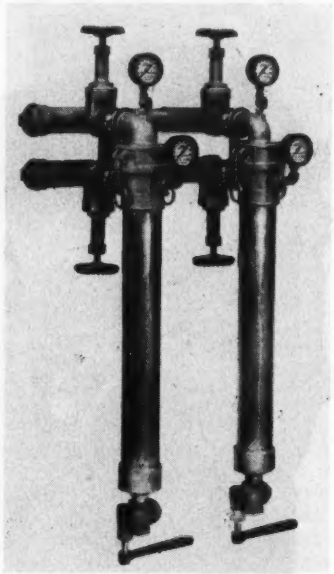
When inquiring check CP 8676 on handy form, pgs. 2-3

Welded & soldered filter can be cleaned with dilute acid . . .

dilute hydrochloric knocks out tough dirt

Uses: Designed for general applications, successfully used in filtering process water, gasoline and oils, hydraulic fluids, chemicals and others.

Features: Monel filter element is electrically welded and soldered to its connection. It will withstand



Dual tube filter unit

cleaning with dilute hydrochloric acid without damage to element. Normal quick cleaning is accomplished with blow-off.

Description: Single and dual tube filters employ non-short-circuiting design. Filter elements can be supplied for particle retention from 1/16 to 0.0012 inch. No internal gaskets or pressed fits are used so that filter element cannot be by-passed.

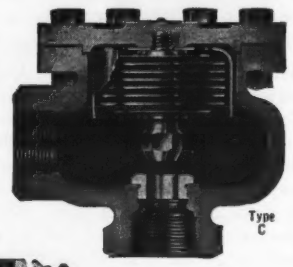
Coupling and uncoupling are accomplished in very short time with no special tools or expert help. Filter element can be taken out of the body for inspection or cleaning in less than 33 seconds.

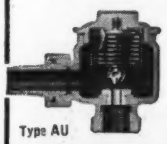
Capacities of dual tube filter units range from 5 to 5000 gpm with allowable pressures up to 150 psig. Triplex and higher multiple units are also made where complete washing is desired.

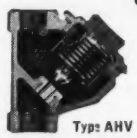
CUT PROCESSING CYCLE 20%

with Nicholson Steam Traps

A large processor reports that substitution of Nicholson thermostatic traps for a mechanical type shortened an important heating cycle from 5 to 4 hours. They credit the higher and more even temperatures Nicholson traps effect. See why leading plants are increasingly standardizing on Nicholsons for faster heat transfer. 5 types for every application: process, power, heat; sizes ¼" to 2"; press. to 250 lbs.







BULLETIN 152

181 Oregon St.
Wilkes-Barre, Pa.

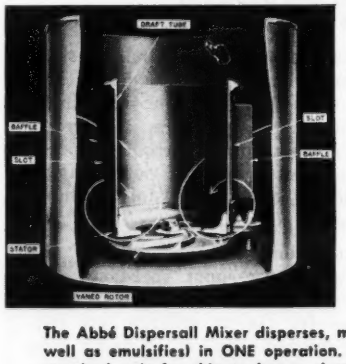
W. H. NICHOLSON & CO.

TRAPS · VALVES · FLOATS

When inquiring check CP 8677 on handy form, pgs. 2-3

TAKE A *Profitable Shortcut*

in All Fluid Mixing . . . and Many Paste Mixing and Blending Operations



As rotor turns at high speed, mix is forced through the narrow opening between rotor and stator. Lumps and globules are broken up and mix is subjected to very turbulent mixing action. Mix is thrown out and up from rotor in a spiral, circulating motion, through the slots in the draft tube and thence down through the rotor-stator again.

The Abbé Dispersall Mixer disperses, mills and blends (as well as emulsifies) in ONE operation. Shown here is the standard unit for thin to heavy slurries. (For pastes, a cupped rotor-stator mixing element is used, together with a double rotating paddle and scraper device.) When you need very fast mixing and blending, with thorough elimination of solid agglomerates and liquid globules, you cannot afford to overlook the unique and economical job done by the Dispersall Mixer.

Catalog 68 tells the whole story in detail. Write for a copy.

ABBÉ ENGINEERING CO. 46 CHURCH STREET NEW YORK 7, N. Y.

Makers of

ABBÉ ENGINEERING Ball, Pebble and Jar Mills

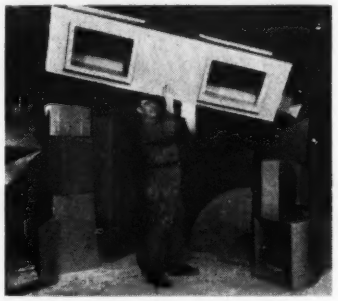
When inquiring check CP 8678 on handy form, pgs. 2-3

(Tube filter is manufactured by Ronningen Manufacturing Co., Dept. CP, Vicksburg, Mich. . . . or for more information check CP 8679, pages 2 and 3.)

No limit to size, shape of plastic fabricated tanks and ducts . . .

light, strong material is not easily damaged

Tanks and ducts made of a reinforced polyester laminate are being fabricated to specifications, without limitation as to size and shape. No molds are used and a number of advantages are claimed. Although material has the tensile strength of steel, it is only one-fifth the weight.



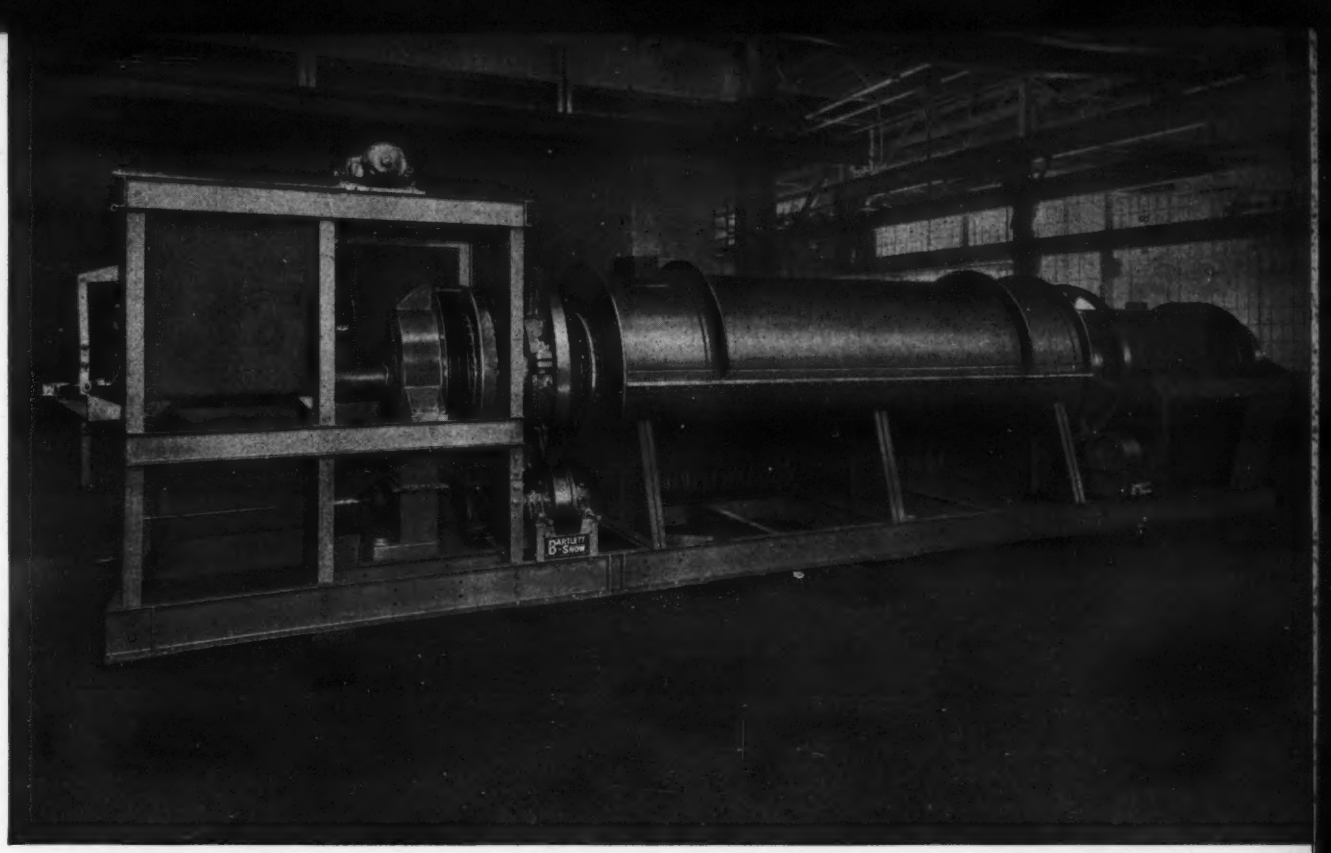
Reinforced polyester laminate is reported to withstand relatively high temperatures

Since the laminate is a chemical-resistant structural plastic, problem of chipping, crazing, scratching, or other damage that might occur with a coating, is eliminated. Material is reported to withstand higher temperatures than vinyls, rubber, and polyethylene.

Tanks fabricated from the plastic are not tapered so that the entire area is available. Ducts made of the material are easily installed and are especially recommended by manufacturer for conveying corrosive fumes. Another advantage is economy of manufacture and fast delivery.

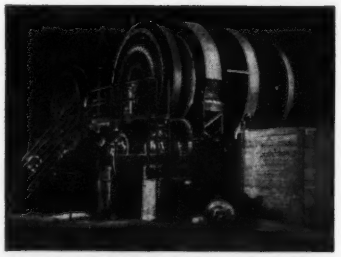
(Iolyte, Fiberglas reinforced polyester laminate is product of Schori Process Div., Ferro-Co Corp., Dept. CP, 8-11 43rd Rd., Long Island City 1, N. Y. . . . or for more data check CP 8680, pgs. 2 & 3.)

For more information on product at right, specify CP 8681 . . . see information request blank between papes 2 - 3.



continuous Calciner and Cooler

uses special atmosphere if desired



Two Bartlett-Snow Batch Rotary Kilns, Preheating Charges for Electrical Furnaces.

Indirect Heat Continuous Calciner with Quartz Lined Nickel Alloy Tube

● These units permit materials to be processed continuously at temperatures from 900° F to 2100° F in a reducing, oxidizing or neutral atmosphere, cooled, and discharged at 200° F or lower. The chrome nickel alloy tube can be lined if desired, to permit processing without bringing the material into contact with metal at elevated temperatures. Feed hopper, variable feeder, seals and breechings are all supported on a single frame to assure proper alignment and efficient trouble-free operation. Our complete laboratory and experimental facilities enable us to determine accurately the time cycle, temperature, pitch, rate of feed, special atmosphere and all other conditions needed to produce a given result, before the production unit is designed or built. Let us work with you on your next job.

DESIGNERS ENGINEERS

BARTLETT B-SNOW CLEVELAND 5, OHIO

FABRICATORS ERECTORS

Dryers • Coolers • Calciners • Kilns

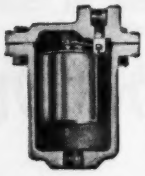
"Builders of Equipment for People You Know"

Double Drainage Capacity with Clark DUO-STEP Traps

Engineers know that the effective drainage of condensate from steam lines is a matter of trap capacity. How much condensate can a steam trap of a given size drain in a specific time? The more it can drain the more efficient the trap.

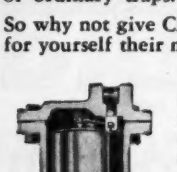
Many tests over a period of years prove that Clark Duo-Step Steam Traps, using the patented double fulcrum principle, can drain *twice* the condensate of ordinary traps.

So why not give Clark Duo-Step Traps a trial on your steam lines and discover for yourself their money-saving features. Phone, write or wire for information.



CLARK "701"-D (DUO-STEP) TRAP. A forged steel trap for pressures up to 500 P.S.I. and temperatures of 750°F. Equipped with "double-drainage" Duo-Step Leverage and Venting, Clark-loy seats and discs. Pipe sizes ½" or ¾".

SERIES "80"-D (DUO-STEP) TRAPS. Cast semi-steel construction for pressures up to 250 P.S.I. and temperatures to 450°F. Equipped with Duo-Step Leverage and Venting, Clark-loy seats and discs. Pipe sizes from ½" to 2".



"Y" SELF-CLEANING STRAINERS. Remove dirt, scale and grit from steam, fluid and gas lines. Sizes ½" to 3" I.P.S.

SERIES "60" INVERTED BUCKET TRAP. Choice of horizontal or vertical inlet or outlet. For pressures up to 150 P.S.I. "Clark-loy" guided disc and seat.

HOME OF DUO-STEP [illegible] RAGE

Clark

MANUFACTURING COMPANY

1830 EAST 38th STREET

CLEVELAND 14, OHIO

Distributors and Representatives in all major cities

When inquiring check CP 8682 on handy form, pgs. 2-3

Rubber-impregnated leather functions as non-porous, cup packing . . .

material will sustain –65° to +200°F temperatures, pressures from 0 to 15,000 psi

The pliability characteristic of rubber packings and the long-wearing, anti-extrusion qualities of leather have been merged in manufacturer's VIM 1243 Type 3 cup packing. Completely impregnated with a synthetic elastomer, the bond between the leather (long fiber, mineral tanned) and rubber is completed by a special polymerization process.

Designed for either oil or pneumatic service, the cup packings are reported to have high resistance to oils, solvents, abrasion, cold flow, or extrusion. Non-porous properties are due to impregnation of synthetic rubber and small amount of friction is attributed to packing's high resiliency and the fact that the leather fiber is in contact with the wearing surface. Serviceable in temperature range from –65° to +200°F, operating pressures from 0 to 15,000 psi, it is reported that the cup packings will not cold-bond to metal surfaces, score highly polished metal surfaces, cause pitting, corrosion, or harden in storage.

Cups can be used in cylinders made from all types of metals and are available in standard sizes from 7/16" OD through 6" OD. Non-standard sizes can be produced, provided molds are available.

(Packing cups are manufactured by E. F. Houghton & Co., 303 W. Lehigh Ave., Philadelphia 33, Pa. . . . or for more information check CP 8683 on handy form, pages 2 and 3.)

Covers finishing and maintenance of all types of floors

Large, loose-leaf notebook carries complete information for finishing, reconditioning, and care of all types of floors. This information should be of considerable value to anyone concerned with any phase of floor maintenance.

Included are care of linoleum with proper waxing and cleaning and the recommended treatment for rubber floors. A non-slip treatment for asphalt tile is described. Three methods are presented for reconditioning wood floors subject to heavy traffic. Procedure describes treatment prior to sealing and finishing. Finishing and maintenance of concrete, terrazo, marble, and cork are also covered.

In another section of notebook, manufacturer's products that are available for proper treatment of floors are described. Uses, specifications, and film properties of each are given. Included are cleaners, finishes, seals, strippers, oil, and wax. One product that will contribute to floor safety is manufacturer's Sure Step Wax for anti-slip applications.

"Protective Coatings" will be furnished to manufacturers of paints and distributors of floor finishing products on their letterhead requests to T. F. Washburn Co., Dept. CP, 2244 N. Elston Ave., Chicago 14, Ill.

Nylon?

Strongest, toughest. Good for alkalis, organic acids, many solvents. Temperatures to 250°F.

Orlon?

For *HOT* acids, solvents, up to 300°F. Tops for dust collection in hot, corrosive fumes.

WHICH SYNTHETIC FABRIC IS BEST FOR *your* FILTER?

Dynel? Vinyon–N?

These versatile fabrics resist both acids, bases, even in high concentrations. Temperatures to 230°F.

One of the four materials listed above is best for any tough filtration or dust-collection job that can be handled by fabric-type media. These strong, chemical-resistant fabrics last 3 to 30 times longer than ordinary materials . . . save up to thousands of dollars a year.

FEON fabrics can save on your *tough* jobs, too. They are made in a variety of weaves . . . as yard goods . . . or as pre-fitted elements for any type of equipment. Write us today.

Fabric selector chart, technical data, case histories. Send for it today.

C

FILTRATION FABRICS DIVISION

FILTRATION ENGINEERS, INC.

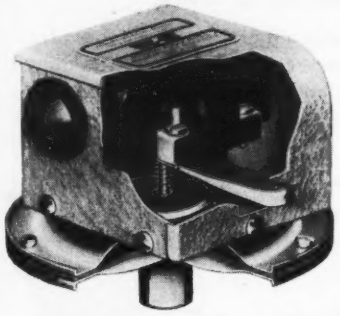
155 Oraton St., Newark 4, N. J.

When inquiring check CP 8684 on handy form, pgs. 2-3

Vacuum switch stops power when liquid runs dry . . .

serves as warning control in vacuum systems

Designed for use with electric motors and gasoline engines, vacuum switch may function as circuit-breaker or control where the safety of equipment depends on a suction-



Vacuum switch for electric motors or gas engines operates on spring-loaded, rubber diaphragm principle

delivered lubricant, fuel, water, or similar fluid. Vaccum firing in manufacture of ceramics and protection of materials in vacuum are two examples where the Vac-on switch can act as a warning control.

The switch mounts on suction line and is wired into power supply of electric motors or the spark system on gasoline engines. When suction falls below predetermined negative pressure (approximately 1" mercury), switch automatically cuts off motor of gas engine.

Operating on spring-loaded, rubber-diaphragm principle, switch utilizes silver contact points for heavy service. A hand switch is incorporated for manual restart. Model for motor use will operate on electric motors up to 2 hp AC and ½ hp DC. Gasoline engine model is designed to short the spark plug in the event of liquid supply failure.

(Vac-on switch is a product of Jaycon Associates, Dept. CP, 404 N. Washington Ave., Minneapolis, Minnesota . . . or for more data check CP 8685, pages 2 and 3.)

For more information on product at right, specify CP 8686 . . . see information request blank between pages 2 - 3.

LOOKING DOWN YOUR PIPELINE . . .

. . . what do you see? Dependability . . . or frequent failure; long, economical life . . . or costly maintenance; W-S FORGED STEEL FITTINGS . . . or the ordinary kind that are a source of constant trouble and expense?

W-S Screw-end and socket-weld fittings are the *only* type that become integral parts of your steel pipe-lines . . . their forged steel construction matches that of the pipe or tubing in chemical and physical properties, in strength, weight and resistance to pressure . . . heat . . . corrosion.

Whatever your pipe or tubing application, you can profit from the permanence of W-S Fittings. Initial cost is often *less;* final cost is always *least.* Literature is available . . . write for it.

WATSON-STILLMAN FITTINGS DIVISION

H. K. PORTER COMPANY, INC.

131 ALDENE RD., ROSELLE, NEW JERSEY

AMERICAN Cyanamid PROVES

Resin-Bonded Glass Laminates Ideal for Alum Applications

PLA-TANK® PRODUCTS MEET THESE EXACTING DEMANDS

Custom molded from polyester resin and glass fiber, a large one-piece unlined tank 14½ feet in diameter by 8 feet high has solved the corrosion attack problem as an evaporator tank in the alum plant of American Cyanamid Company at Mobile, Alabama. Previously a steel tank was used, lined first with lead and then with acid-proof brick. With a pH of three, the hot liquid still attacked these linings with resulting high maintenance costs as well as constant danger of product contamination from the brick.

The process cycle involves loading the tank with alum sulfate liquor at 160° F. raising the temperature to 242° by steam coils in the tank to evaporate the liquor to dryness in four hours.

Many Advantages of New Tanks

Advantages of the new reinforced plastic tank are many and substantial. Cost is less than half the lined steel tank. Weight is under 20% of the lined steel. Corrosive attack as measured on various pilot applications will be negligible over an indefinitely long life.

These advantages are everyday occurrences on jobs where PLA-TANK Resin-Bonded Glass Laminates go to work to solve corrosion problems. PLA-TANK Ductwork for fumes and gases, PLA-TANK Vent Hoods over tanks and evaporators, PLA-TANK Stacks for resistance to both fumes and weather, as well as Tanks large or small, open or closed, can all be built to specifications for given applications in all sorts of chemical process plants or systems.

Paper Industry Interested

While the application described here is in an alum manufacturing plant, every user of alum will be interested because he shares the same corrosion problems in some degree. Papermakers, tanners, water treatment plants — everyone using alum can profit by investigation of PLA-TANK Resin-Bonded Glass Laminate Products.

FREE TECHNICAL DATA SHEETS

Upon request, without obligation, you may receive a full set of PLA-TANK Data Sheets showing chemical and physical properties, Standard Tank, Pipe, Duct and Hood units as well as data on custom built equipment.

THE Chemical CORPORATION

63 WALTHAM AVENUE SPRINGFIELD 9, MASS.

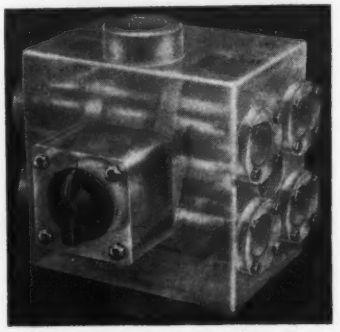
When inquiring check CP 8687 on handy form, pgs. 2-3

Control without leakage in ion-exchange cycles offered by valve

Uses: For controlling cycles of flow in ion-exchange equipment.

Features: Unit is said to eliminate all possibility of leakage by providing an isolated section connected to waste between outlet and all sources of contamination.

Description: Requiring a minimum of torque for operation, valve can be manually or automatically operated. Four double-acting pistons give positive valve action, actuated by a simple, integral finger tip control.



Ion-exchange control valve can be automatically or manually operated

Design does away with spring loading and large, unbalanced areas and flat surfaces which inherently result in leakage. Valve can be completely disassembled with a pocket wrench in 15-20 minutes without removing piping connections.

(Developed by American Water Softener Co., Dept. CP, 330 W. Lehigh Ave., Philadelphia 33, Pa. . . . or for more information check CP 8688 on handy form, pages 2 and 3.)

Power transmission couplings—4 pages

Engineering advantages gleaned from the application of crowned-tooth type couplings for power transmission are described in 4-page, 2-color bulletin.

Bul 1052 is issued by American Flexible Coupling Company, Dept. CP, Erie, Pa. When inquiring specify CP 8689 on handy Reader Service slip, between pages 2 and 3.

SPERRY HAS THE ANSWERS —Whatever Your Filtration Problems May Be . . .

During a half century of designing filter presses for America's manufacturing companies, Sperry has solved nearly every known type of industrial filtration problem. Sperry Filter Presses are flexible in size and design . . . there is a complete range of filter bases . . . and a choice of six different closing devices.

Send for the Sperry Filter Press catalog and you'll see why Sperry can solve *your* filtration problems efficiently and economically.

D. R. SPERRY & CO.
Batavia, Illinois
Filtration Engineers for More Than 60 Years

Eastern Sales Representative:
George Tarbox,
808 Nepperhan Ave.,
Yonkers 3, N. Y.
Yonkers 5-8400

Western Sales Representative:
B. M. Pilhashy,
833 Merchants Exchange
San Francisco, 4, California
DO 2-0375

When inquiring check CP 8690 on handy form, pgs. 2-3

At Last! 400 SERIES LANKOTE

A New Corrosion-Resistant Protective Coating

applies, smells and looks like ordinary paint!

LANKOTE 400 SERIES synthetic resin coatings protect against acids, alkalis, alcohol, salts, moisture, fungus growth, weathering. Use on metal, wood, masonry, plaster and other porous surfaces for all-around maintenance, indoors or out. Easily brushed (with no drag, no brush marks), sprayed, dipped or roller-coated without special thinners, and with no objectionable solvent odors. Works well even over most old paints!

All Lankote coatings "tailored" to your needs, even if one gallon is all you require! Draw on our 4,000 formulas developed during 32 years of experience. *For solutions to special problems, write for "Corrosion Questionnaire."*

LANKOTE DIVISION
J. Landau Co., 221 Wooster Street, New York 12, N. Y.
leader in protective coatings since 1920

When inquiring check CP 8691 on handy form, pgs. 2-3

Wide variety of corrosive conditions can be combatted by fittings with rubber seals . . .

list is available showing applications for which butyl rubber is recommended

Availability of butyl rubber seals in manufacturer's line of stainless steel fittings will enable them to be used in a greater variety of corrosive conditions and services than is now possible. List can be obtained which shows those applications for which butyl rubber seals are recommended in preference to Neoprene.

Butyl seals are reported to be particularly effective in handling sulfuric, hydrochloric, phosphoric, and acetic acids. They also withstand action of alkalis and hypochlorites. Resistance to nitric and chromic acids is said to be especially noteworthy. Neoprene seals will continue to be standard, but butyl rubber can be furnished on request.

Line of stainless steel fittings, for which butyl rubber seals are available, are units produced by manufacturer which permit rapid assembly and disassembly without threading, flaring, or welding.

(Quikupl fittings are products of The Cooper Alloy Foundry Co., Dept. CP, Hillside, N. J. . . . or for more information check CP 8692 on handy form, pages 2 and 3.)

Offers complete color scheme based on scientific selection

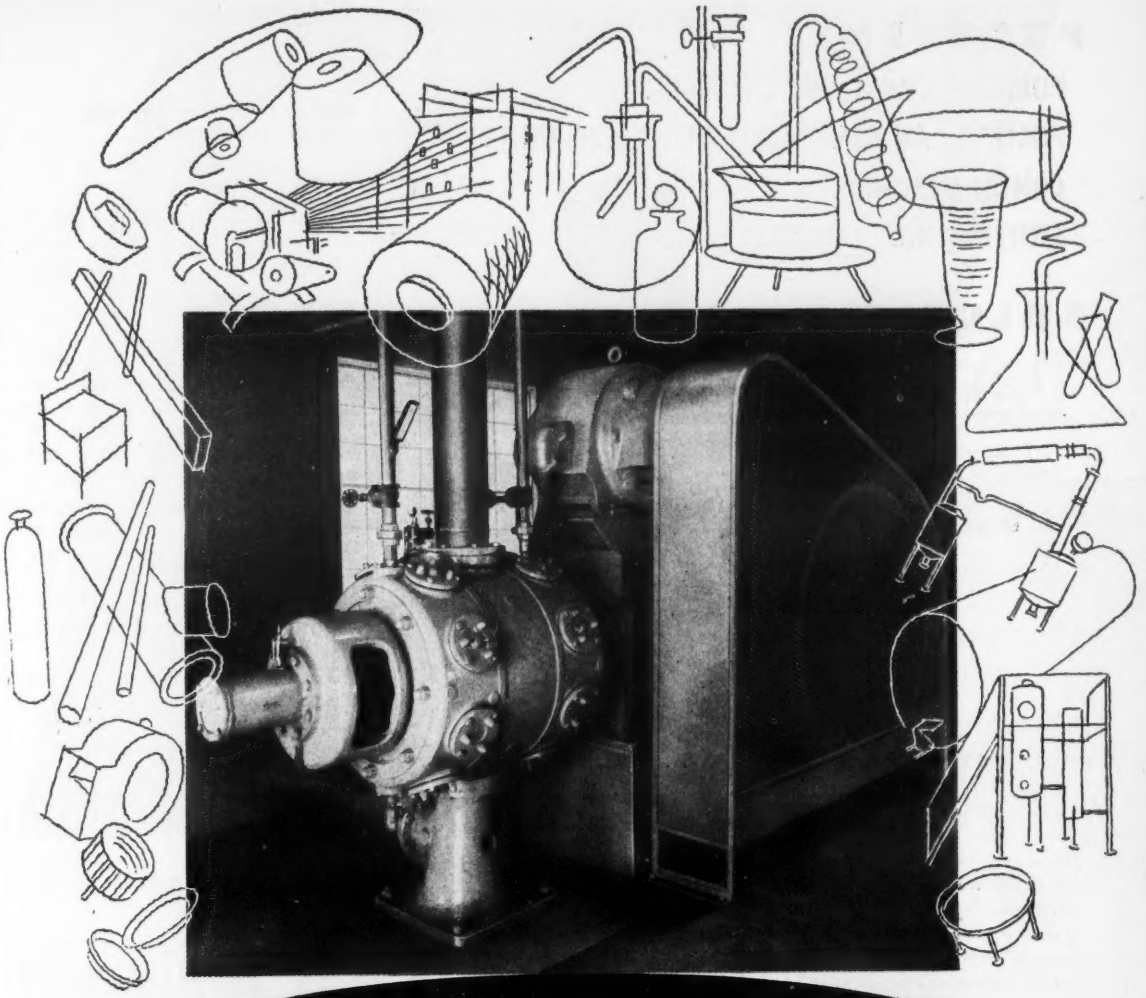
Complete system of color selection, based on scientific properties of a basic color series and psychological effect of working conditions, offers a restful, untiring, balanced color diet for worker's eyes. Basic colors are selected to complement and soften the predominant color of working light, natural or artificial.

Comprising six basic colors — blue, green, tan, coral, yellow and gray, system is represented by color chips in four graduated shades of varying light reflectance for each color except yellow. Two shades of yellow and two additional colors for ceilings are also shown. Altogether, system comprises a total of twenty-four colors, scientifically selected. Shades of the colors are numbered from 1 to 4, indicating degrees of light reflectance of each.

Color system is built around line of oil-base and latex-base interior wall and trim finishes. Complete range of textures is offered, including flat, velvet, semi-gloss and gloss enamel. Undercoaters and sealing primers round out the manufacturer's line.

Color selection system and line of finishes are discussed in detail in 4-page booklet. Color chips and specifications of all twenty-four colors are featured, and each type finish is described according to function and method of application.

Bul C-112 is issued by The Arco Co., Dept. CP, 7301 Bessemer Ave., Cleveland 27, Ohio. When inquiring specify CP 8693 on handy form, pages 2 and 3.



Protect Products

WITH CP OIL-LESS CYLINDER COMPRESSORS

If you use air for operating instruments or if you process chemicals, beer, food or other products where oil-laden air would be a detriment, you need a Chicago Pneumatic Oil-Less Cylinder Compressor.

Available in three types, CP Oil-Less Compressors have carbon piston rings – need no oil or other lubricant. The Class T-BO illustrated above has a full-floating piston with an outboard crosshead. Piston weight is not carried by the cylinder wall or the carbon rings – rings act only as a compression seal against the hardened steel cylinder liner. A distance piece between cylinder and frame, and carbon piston rod packing prevent transmission of oil into the cylinder from the frame.

For more details, write for Bulletin 728 Supplement D.

CHICAGO PNEUMATIC TOOL COMPANY
8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

When inquiring check CP 8694 on handy form, pgs. 2-3

PROBLEM:

PUMPING CORROSIVE CHEMICALS?

POSITIVE, AUTOMATICALLY-REGULATED FEED?

CONTAMINATION?

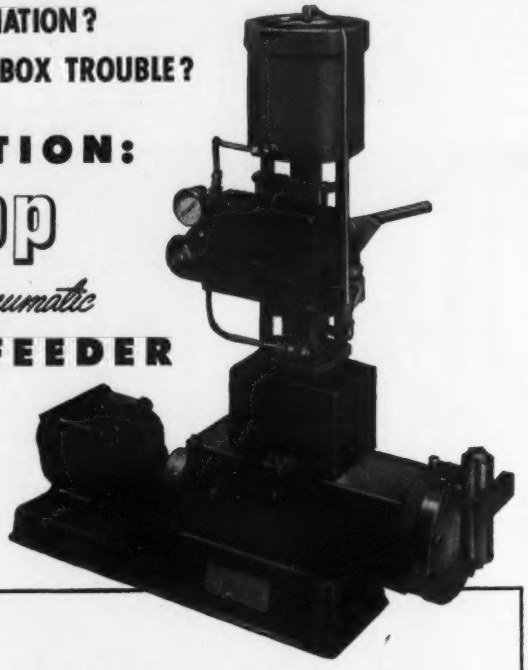
STUFFING BOX TROUBLE?

SOLUTION:

Lapp

Auto-Pneumatic

PULSAFEEDER



Chemicals successfully being handled include gum and sludge inhibitors, metal deactivators, anti-oxidants, dyes and stabilizers. Also those for boiler water or processing water treatment—concentrated sulphuric acid, sodium sulphite, filter aid slurries, liquid caustic. For the Lapp Pulsafeeder is the positive-displacement pump for controlled-volume pumping of liquids which depends on no stuffing box or running seal—avoids contamination by an hydraulically-balanced diaphragm which isolates pumping mechanism from chemical being handled. Pumps against pressures up to 2,000 lbs., at constant pumping speed—variable flow results from variation only in piston-stroke length. Auto-Pneumatic control uses instrument air pressure responding to any instrument-measurable variable.

GOT A SPECIAL PROBLEM? Every month we hear about applications to which the Lapp Pulsafeeder is the long-awaited answer. A newly-issued bulletin, No. 300, will tell you about our pump and its characteristics, with typical applications and flow charts. A Pulsafeeder Inquiry Data Sheet, on which you can outline your processing requirement, will bring an engineering recommendation. Write us today. Lapp Insulator Co., Inc., Process Equipment Division, 760 Maple Street, Le Roy, N. Y.

Lapp

Auto-Pneumatic

PULSAFEEDER

When inquiring check CP 8695 on handy form, pgs. 2-3

Fast drying, free flowing, yet tough enamel . . .

competes with lacquers in drying for first time

Enamel has been developed which is reported to be free flowing, have high gloss, be tough, have high resistance to chemical fumes, and yet dry in a matter of minutes. According to manufacturer, this is the first time that a tough enamel can be said to be in the competitive field with lacquers with respect to drying time. This is also said to be the first time that Ruvial has been incorporated in an enamel.

This means that a durable, weather-resistant enamel can be used where drying in a very short time is important. Typical applications include use on exterior equipment, road machinery, industrial equipment, and furniture.

(Totrust Instant Dry Enamel is product of The Wilbur & Williams Co., Dept. CP, 130 Lincoln St., Boston 35, (Brighton) Mass. . . . or for more information check CP 8696 on form, pgs. 2 & 3.)

Non-oxidizing gaskets resist chemicals

Resilient nature and chemical resistance of vinyl plastic material makes it a suitable gasketing material for equipment handling corrosive liquids, semi-solids or gases. It resists not only all chemicals which rubber will handle satisfactorily, but is particularly resistant to highly oxidizing solutions.

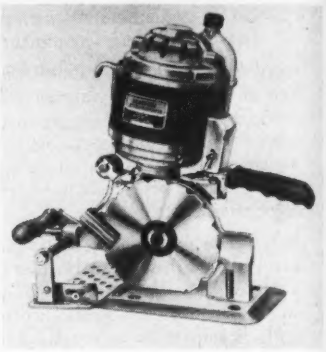
In addition to being resistant to acids and alkalis, material can be used in equipment handling oils, greases, water, gasolines, and most solvents, except esters, ketones, and certain aromatic hydrocarbons.

Composition and physical properties of gasketing material, method of application, uses, advantages and disadvantages are discussed in 4-page bulletin. Handy charts summarize types of material available and standard gasketing formulations.

Bul G-520 is issued by The U. S. Stoneware Co., Dept. CP, Akron 9, Ohio. When inquiring specify CP 8697 on handy Reader Service slip, between pages two and three.

HAVE YOU GOT A CUTTING PROBLEM?

Put It Up To Cutting Machine Specialists



There's sixty years of cutting machine know how behind the MAIMIN answer to your cutting problem. Machine illustrated is but one of the portable, powerful cutting machines made by Maimin for the toughest industrial cutting jobs. Tell us your problem and send sample of your materials.

H. Maimin Co., Inc. 575 Eighth Ave. New York 18, N.Y.

MAIMIN CUTTING MACHINES Since 1892

When inquiring check CP 8698 on handy form, pgs. 2-3

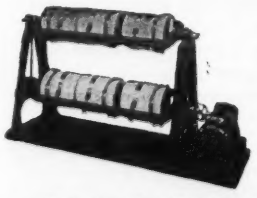
One Quart . . . 3000 Gallons . . .

What Grinding . . . Mixing . . .

Blending Capacity Do You Need?

Colors, pigments, paints, enamels, varnishes, printing inks, coatings, minerals, metals, chemicals, plastics, drugs and pharmaceuticals, cosmetics, foods . . . whatever you have to grind and blend for your processes . . . will be handled at top effectiveness, in minimum time and at the lowest possible over-all cost in

ABBÉ ENGINEERING MILLS



. . . available in the capacity you require, from the one quart single jar porcelain jar mill through a range of jar mills, jar rollers, ball and pebble mills up to 3000 gallons and larger.

Write for the Abbé Jar Mill and Pebble Mill Catalogs.

ABBÉ ENGINEERING CO. 46 CHURCH STREET NEW YORK 7, N. Y.

Makers of

ABBÉ ENGINEERING Ball, Pebble and Jar Mills

When inquiring check CP 8699 on handy form, pgs. 2-3

Water, dirt, dust are all removed from floors by portable vacuum cleaner . . .

interior and exterior of cleaning unit tank are porcelain-lined to prevent rust, corrosion

Uses: Serviceable for removing water, dirt, dust from floors.

Features: Collecting tank (8½ gal) has porcelain-lined exterior and interior to prevent rust and corrosion. Positive action shut-off device warns operator when tank is filled to capacity.

Description: Model WD-15 wet-dry vacuum cleaner rides on four free-running, ball-bearing swivel rubber casters. A two-stage turbine, powered by a ⅞ hp Universal type motor, both moisture-proof and rubber mounted, picks up unwanted dirt and material from the floor. Water lift is 61". Entire base of the machine is surrounded by a protective, non-marking rubber bumper. Unit is furnished complete with hose, wand, water pick-up squeegee tool, and felt shod tool.

(Development of Clarke Sanding Machine Co., Dept. CP, 30 E. Clay Ave., Muskegon, Mich. . . . or for more information check CP 8700 on handy form, pages 2 and 3.)

Lists specifications, features of industrial pumps

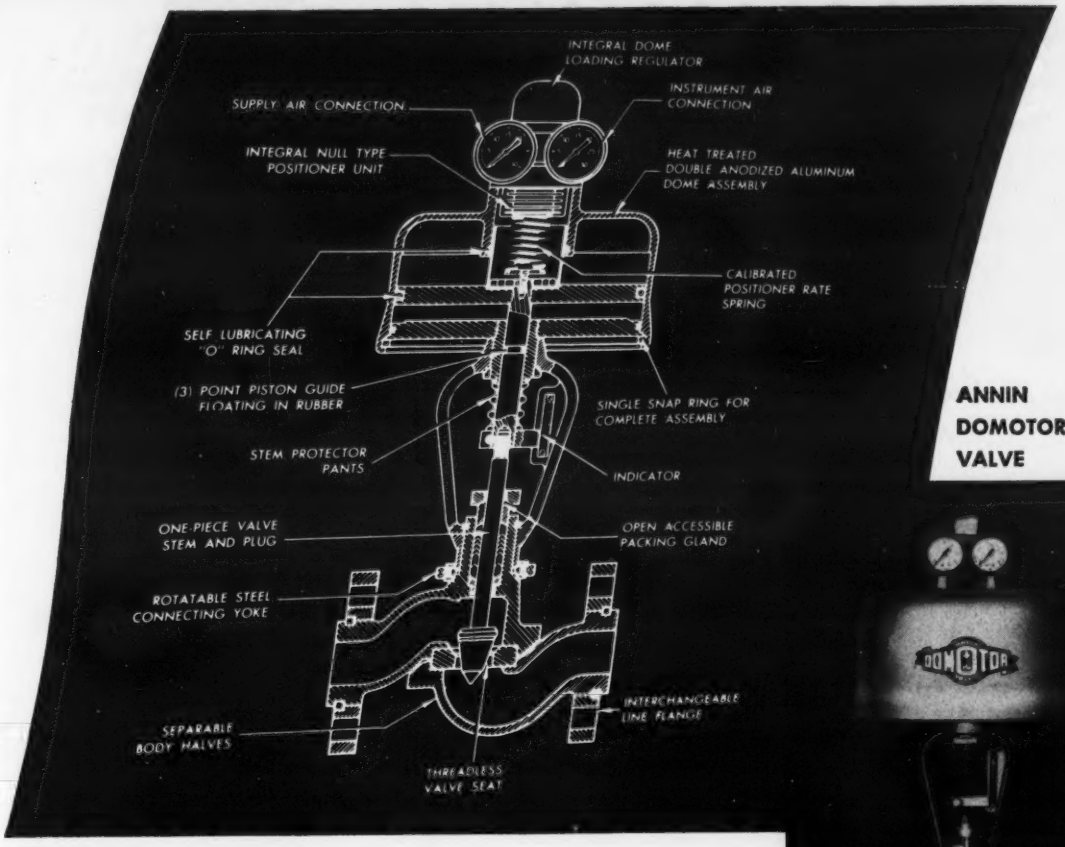
Illustrated 96-page catalog presents comprehensive information about numerous types of industrial pumps. Sectional and exterior views of various units show construction and design features of interest to users.

Included in types of pumps described are standard models of centrifugal pumps, including single and two ball bearing, side suction types, portable types, self-priming centrifugal pumps, high pressure, vertical centrifugal pumps and split case centrifugal pumps.

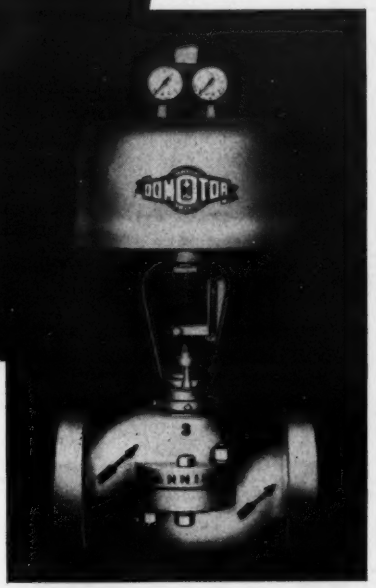
Also featured are sump pumps, sewage pumps, two stage side suction centrifugal pumps, centrifugal latex pumps, vertical turbine pumps, condensation return units and hydraulic pressure test pumps. Also included in catalog are rotary pumps, oscillating force pumps, vertical piston units, horizontal piston pumps, deep well reciprocating pumps, mine pumps, triplex pumps and related pump accessories.

Tables listing pertinent specifications of various units aid in selection of proper unit for any given use. Section devoted to "Useful Information" includes tables of weights and measures, equivalents of liquid measures and weights, comparison of pressures, suction lifts of various pumps, suction head requirements for pumping hot water, theoretical hp required to lift water to various heights, capacity of pumps per stroke, pipe capacities, pipe friction, and theoretical discharge rates of various nozzles.

Cat I-52 is issued by The Deming Co., Dept. CP, Salem, Ohio. When inquiring specify CP 8701 on handy form, pages 2 and 3.


INTEGRAL DOME LOADING REGULATOR
SUPPLY AIR CONNECTION
INSTRUMENT AIR CONNECTION
INTEGRAL NULL TYPE POSITIONER UNIT
HEAT TREATED DOUBLE ANODIZED ALUMINUM DOME ASSEMBLY
CALIBRATED POSITIONER RATE SPRING
SELF LUBRICATING "O" RING SEAL
(3) POINT PISTON GUIDE FLOATING IN RUBBER
SINGLE SNAP RING FOR COMPLETE ASSEMBLY
STEM PROTECTOR PANTS
INDICATOR
ONE-PIECE VALVE STEM AND PLUG
OPEN ACCESSIBLE PACKING GLAND
ROTATABLE STEEL CONNECTING YOKE
INTERCHANGEABLE LINE FLANGE
SEPARABLE BODY HALVES
THREADLESS VALVE SEAT

ANNIN DOMOTOR VALVE

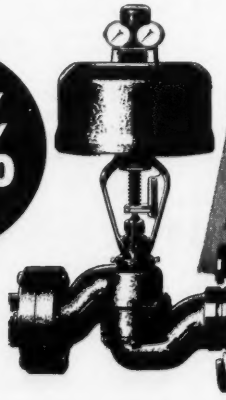


We ~~want~~ GET the Tough Jobs!

When precise control of hard-to-handle fluids is required, engineers and production men have learned from experience to depend on Annin Valves. Designed for long life, low maintenance, and efficient operation, Annin Valves are widely used to control erosive and corrosive fluids under a wide range of temperatures and pressures. Interchangeability of valve bodies, flanges, operators, and plug assemblies lowers the initial investment and cuts inventory requirements.

WRITE TODAY *for illustrated bulletin showing how and why Annin offers the best buy in control valves.*

CUT INVENTORY **50%** WITH



ANNIN *Control* **VALVES**

THE ANNIN COMPANY 3500 Union Pacific Avenue
Los Angeles 23, California

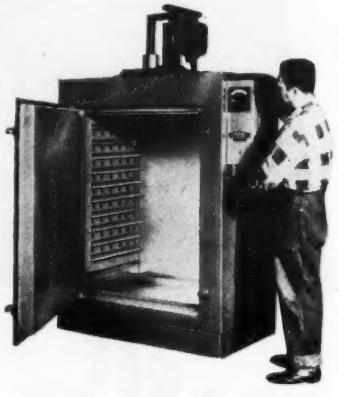
When inquiring check CP 8702 on handy form, pgs. 2-3

Automatic wattage control provides power savings in batch oven . . .

unit has temperature range of 100 to 600°F

Uses: Applications include coil and armature baking, aging, drying, preheating, synthetic finish baking, preheating plastics, curing of coated plating racks, core baking, tempering, and silicone baking.

Features: Fully automatic, heavy duty batch oven features automatic wattage control. This permits reduction of wattage in relation to temperature and load. Unit is said to have balanced heat, with temperature range of 100 to 600°F.



Model 24P industrial oven

Diagonal forced air flow provides circulation of heated air from both sides — horizontally and vertically. Positive fresh air intake and exhaust are standard equipment.

Description: Unit employs power selector switch built into wiring circuit for efficient temperature stabilization. Three standard models are available with following dimensions:

MODEL	Working Chamber (Inches) W	H	D
16P	24	48	24
24P	36	48	24
32P	48	48	24

Model 32P has two doors. All wiring is enclosed and complete. Wiring in oven conforms to NEC standards.

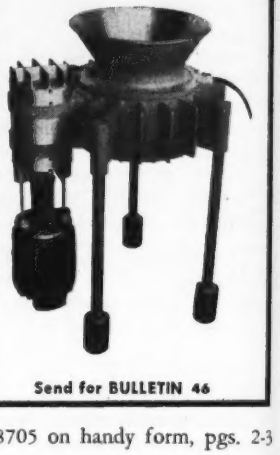
(Electric Industrial Type Batch Oven is manufactured by Blue M Electric Co., Dept. CP, 306-08 W. 69th St., Chicago 21, Ill. . . . or for more information check CP 8704 on handy form, pages 2 & 3.)

FERRO FILTER®

It traps iron—and swallows your losses

FRANTZ MAGNETIC SEPARATOR for Dry, Ground Materials

Eliminate iron contamination to increase salability of your product—to hold your customers. This 68V Dry FERROFILTER in a ceramic tile plant sifts all body materials (except ball clay) before they go into the mixer, removing magnetic particles from 80 to 325 mesh. Its capacity is about 1½ tons of clay per hour. Other materials run through at faster rates. Wet models are also available for filtering slurries.



TRIAL OFFER—Low rental plan enables you to try the FERRO-FILTERS on your job. Write for details.

S. G. Frantz Co., Inc.

P. O. Box 1138, Trenton 6, N.J. Send for BULLETIN 46

When inquiring check CP 8705 on handy form, pgs. 2-3

Sicon in colors withstands 500°F

SICON, THE ORIGINAL SILICONE HEAT-RESISTANT FINISH, IN GLEAMING WHITE AND TAN PROTECTS SURFACE OF HOME INCINERATOR

Here's what the makers of Calcinator say about **SICON**

"In keeping with the high standards we wished to attain for Calcinator, we chose 'Sicon.

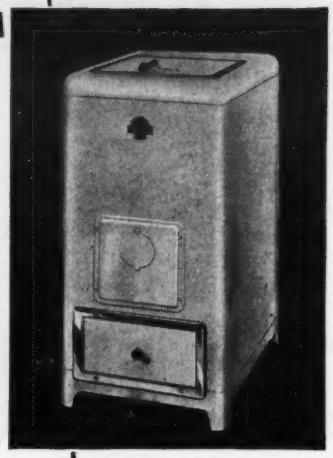
Under rigid perfection tests 'Sicon' was found to have:

1. High resistance to heat when exposed to temperatures ranging from 400 to 500°F.

2. Exceptional color as well as gloss retention qualities.

In addition, only 'Sicon' had good inherent qualities of adhesion and film stability."

W.M. Milbourne, Sales Mgr., Calcinator Division Valley Welding & Boiler Co., Bay City, Michigan



Deluxe Calcinator, the home incinerator so smart looking that it can be placed right in the kitchen. Finished in SICON White.

Standard Calcinator, for utility room or basement location, features latest advances in incinerators. Finished in SICON Tan.

SICON STANDS UP WHERE OTHER HEAT-RESISTANT FINISHES FAIL!

In case after case, for product after product, SICON has proved to be the *only* heat-resistant finish to pass all tests—in the laboratory and on the production line.

Sicon, in smart decorative colors, now opens up a new horizon for design engineers, because only Sicon makes it possible to combine "eye appeal" with retention of color and gloss in the presence of sustained heat.

No matter how rigid your heat-resistant finish requirement, *try* Sicon, the original silicone-base finish that has revolutionized product finishing wherever high temperatures pose a problem.

Write for brochure and complete engineering details.

Sicon

Silicone-Base Heat-Resistant Finish

manufactured exclusively by MIDLAND INDUSTRIAL FINISHES CO. Waukegan, Illinois

VARNISHES • ENAMELS • LACQUERS • SYNTHETICS

When inquiring check CP 8703 on handy form, pgs. 2-3

BRIEFS...

from contemporary publications

READ THEM . . . IN THIS ISSUE

You get a "quick look" at the most valuable articles being published in this field, and kindred fields . . . by reading the "BRIEFS" section of CHEMICAL PROCESSING every month.

Our Editors read more than 50 contemporary publications every month . . . select those articles they believe you will want to know about . . . and, in terse style, they tell you about them. Name of publication and issue are given so you can read those you want to know more about.

It's a monthly service . . . to save you time . . . yet keep you informed. See "BRIEFS" in this issue, page 160.

Flue gas at 800°F resisted for four years by valves in oil refinery

Four valves have withstood the action of flue gas containing sulfur for four years at 800°F under a pressure of 300 psi. A large oil refinery in the Southwest installed the through-conduit valves in a flue gas line of a hydroformer unit. Seats and seating surfaces of gates are protected by coating of Hastelloy alloy B. In spite of the severe operating conditions, a recent check showed valves to still be in good shape, all four seating surfaces on each valve were found to be in excellent condition.

Coating is also being used to protect valves handling oil at 350 to 1000°F under high pressures and where impurities like hydrogen sulfide and sulfur are present. Similar valves have given exceptional service handling such corrosive media as hydrochloric acid solutions, sulfuric acid solutions, isopropyl alcohol, and other materials used in chemical and petrochemical processes.

(Hastelloy alloy B is a product of Haynes Stellite Co., Div. of Union Carbide and Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N. Y. Valves used in refinery operation were produced by W-K-M Company, Houston, Texas . . . or for more information check CP 8706 on handy form, pages 2 and 3.)

Factual bulletin covers concrete mixtures

Fundamental facts about concrete, including discussion of resistance to freezing and thawing as well as requirements of exposure, are outlined in the opening chapter of informative sixty-eight-page bulletin.

Survey of the contents reveals such topics as: materials for concrete, design of concrete mixtures, measuring materials, mixing concrete, field control tests, handling and transporting concrete, placing concrete, joints, curing and protection, removal of forms, finishing, special types of concrete, and a summary of specifications and tests.

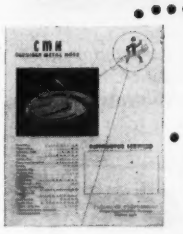
Section on materials for concrete describes types of Portland cement and compares these types. Mixing water, aggregates, commercial aggregates, admixtures, and handling and storing aggregates on the job are discussed in this section in addition to storage and shipment of cement. Interesting photos show difference in components of graded sands.

Specifications for plain and reinforced concrete, a listing of ASTM standards on concrete and concrete materials and several specific testing procedures as outlined by ASTM are included in the final chapter of the bulletin.

"Design and Control of Concrete Mixtures", 10th ed, is issued by Portland Cement Association, Dept. CP, 33 W. Grand Ave., Chicago 10, Ill. When inquiring specify CP 8707 on handy form, pages 2 and 3.

WHEREVER rigid piping must be connected to machinery

USE CMH FLEXIBLE METAL HOSE



YOUR GUIDE TO MOTION CONTROL

Catalog 130 gives specifications for all types of CMH hose. Write for a copy or see the Flexonics catalogs in Chemical Engineering Catalog and Sweets Plant Engineering File.

By using CMH Flexible Metal Hose as the connecting link between rigid pipe and machinery, you solve two otherwise serious problems—the elimination of damage to the piping because of vibration and the compensation for any misalignment that may exist. Properly installed, CMH Flexible Metal Hose will give long, dependable, trouble-free service without further attention.

Whatever your flexible connection problem, there is a CMH hose type to meet your needs. Corrugated and convoluted types are available in a wide variety of designs and in a complete range of sizes. CMH Flexible Metal Hose is offered in steel, bronze, stainless steel and other alloys to fill your requirements. Your Flexonics distributor will give you further data. Look for his name in your classified telephone directory or we will be pleased to send it to you.

Flexon identifies CMH products that have served industry for over 50 years.

CMH

CHICAGO METAL HOSE Division

Flexonics Corporation 1319 South Third Avenue, Maywood, Illinois

In Canada: Flexonics Corporation of Canada, Ltd., Brampton, Ontario

Flexible metal hose

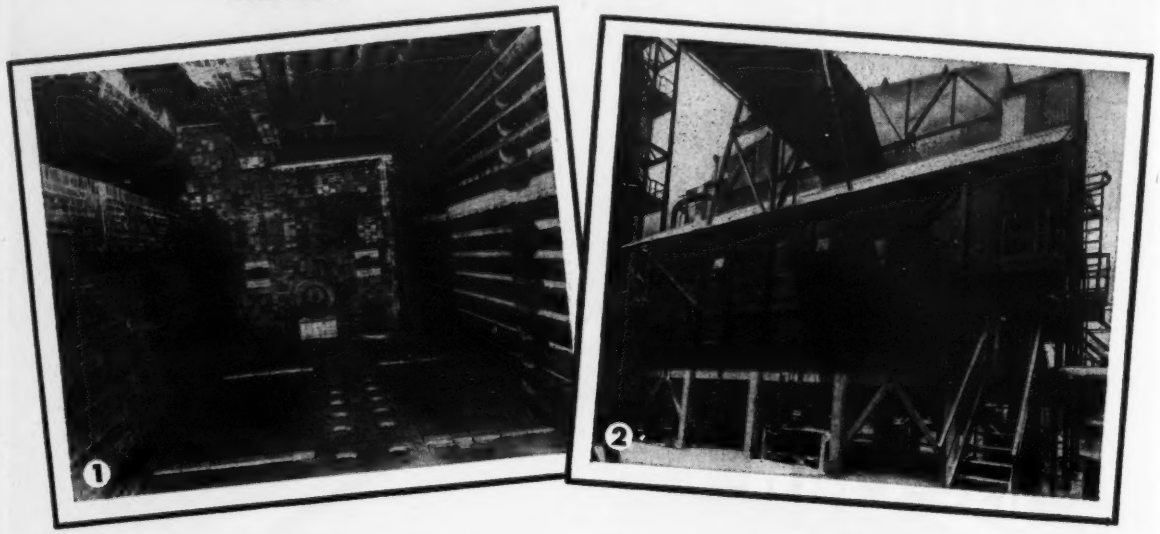
Expansion joints

Aircraft components

Metallic bellows

When inquiring check CP 8708 on handy form, pgs. 2-3

4 Sure Ways to Save Money in PROCESS FURNACES



In process furnace operation, every dollar counts. That's why leading manufacturers of chemical and petroleum process furnaces save their customers money *four ways* by using B&W Insulating Firebrick. These durable, lightweight brick . . .

1 CUT INSTALLATION COSTS — B&W Insulating Firebrick are easy to install. They can be cut, drilled or shaped on the job with ordinary woodworking tools. Their lightness makes them easy to handle.

2 ELIMINATE EXPENSIVE ALLOYS — Because of their high insulating values, B&W Insulating Firebrick can be supported with ordinary carbon steel hangers. Expensive, heat-resisting alloys are not necessary.

3 REDUCE DOWN-TIME — These brick have low heat storage, cool off quickly. This makes possible quick access to the furnace for inspection. They heat up quickly to get back on the line, too.

① Interior of The M. W. Kellogg Co. Feed Preheater Furnace lined with B&W K-26 IFB.

② Exterior view of Feed Preheater Furnace.

Ask your B&W representative for all the facts on cost-cutting B&W Insulating Firebrick. He will be glad to discuss your refractories problems with you.

The defense plant expansion program has created unprecedented demands for B&W Insulating Firebrick. It is, therefore, necessary to anticipate your requirements as far in advance as possible.

BABCOCK & WILCOX

THE BABCOCK & WILCOX CO.
REFRACTORIES DIVISION
GENERAL OFFICES: 161 EAST 42nd ST., NEW YORK 17, N.Y.
WORKS: AUGUSTA, GA.

B&W REFRACTORIES PRODUCTS — B&W Alumo Firebrick • B&W 80 Firebrick • B&W Junior Firebrick • B&W Insulating Firebrick B&W Refractory Castables, Plastics and Mortars • OTHER B&W PRODUCTS—Stationary & Marine Boilers and Component Equipment... Chemical Recovery Units . . . Seamless & Welded Tubes . . . Pulverizers . . . Fuel Burning Equipment . . . Pressure Vessels . . . Alloy Castings

When inquiring check CP 8709 on handy form, pgs. 2-3

Only ten seconds needed to convert boiler from gas to oil firing

Ten-second conversion from gas to oil, or vice versa, is now possible in boiler firing. No mechanical or electrical change is necessary, since the boiler can operate on gas with the oil burner in place.

For conversion, a selector switch on control panel is flipped to either gas or oil, then one fuel valve is closed and the other opened.

(Innovation is on combination gas and/or oil fired boilers made by Cleaver-Brooks Company, Dept. CP, 326 E. Keefe Ave., Milwaukee 12, Wis. . . . or for more information check CP 8710 on handy form, pages 2 and 3.)

Reduced size and weight result from design of 5-10 kilowatt electric plant . . .

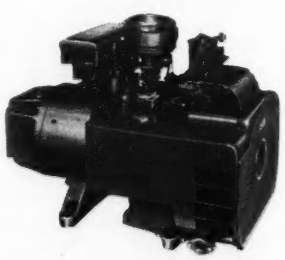
vacuum cooling system is factor in durability and economical operation of unit

Uses: For mobile and portable power requirements of 5 or 10 kilowatts. Applications include use in plants and on construction projects where an independent source of power is needed. Unit can furnish abundant power for floodlights, tools, and other needs.

Features: Gasoline-powered, air-cooled electric generating plant provides a substantial reduction in size and weight per kilowatt. The smaller model, 5 kilowatt capacity, is said to weigh about 300 lb less than similar water-cooled types of the same wattage and is only about one-half the size.

Unit is reported to be economical to operate and to be very durable. One factor assisting in its performance is the vacuum cooling system which employs a centrifugal blower. Cold air is drawn through generator and over engine while heated air is discharged out of an 8 x 12″ side vent.

Description: Two models are available, 5CW and 10CW, for 5 and 10 kilowatt delivery respectively. Units require less than one cubic yard of space. Sharp reduction in size and weight has been achieved by design of engines, generators, and controls. Gasoline engines are twin-cylinder, horizontally-opposed, vacuum air-cooled, 4-cycle type. These are considered to be the first engines in their range (thirteen and twenty horsepower) to be developed exclusively for service in electric plant applications.



Meets need for small, portable electric power plant

Generators in the plants have low temperature rises and long life. Brush holder has constant-tension,

negator-type springs which require no adjustment. Easy starting is obtained through an impulse-coupled, high-tension Magneto ignition system. This permits quick starting without batteries or on occasions when batteries fail.

Unit has oversize bearings, Stellite exhaust valves, seats, ports, and guides. Engine, which is enclosed in a steel housing, operates quietly. Suppression system eliminates radio interference by electrical circuits of the engine, generator, or controls. Plant provides maximum safety, with all moving parts, as well as hot cylinders, cylinder heads, exhaust manifold and tubing safely enclosed in the vacuum housing. Unit is said to be extremely simple to install, operate, and maintain.

(Product of D. W. Onan & Sons Inc., Dept. CP, University Ave., S.E. at 25th St., Minneapolis 14, Minn. . . . or for more information check CP 8711 on handy form, pages 2 and 3.)

Eliminating metal-to-metal contacts in fittings prevents leaks due to vibration . . .

withstands pressures of 4000 psi or more and temperatures from −70 to +400°F

Uses: For metal tubing or piping on fuel, oil, water, air, refrigerant, or other lines under a broad range of temperature and pressure conditions. In addition to standard sized fittings for straight, union, elbow, tee, and cross connections, units are available for forgings, integral fittings, prefabricated assemblies, and other special applications.

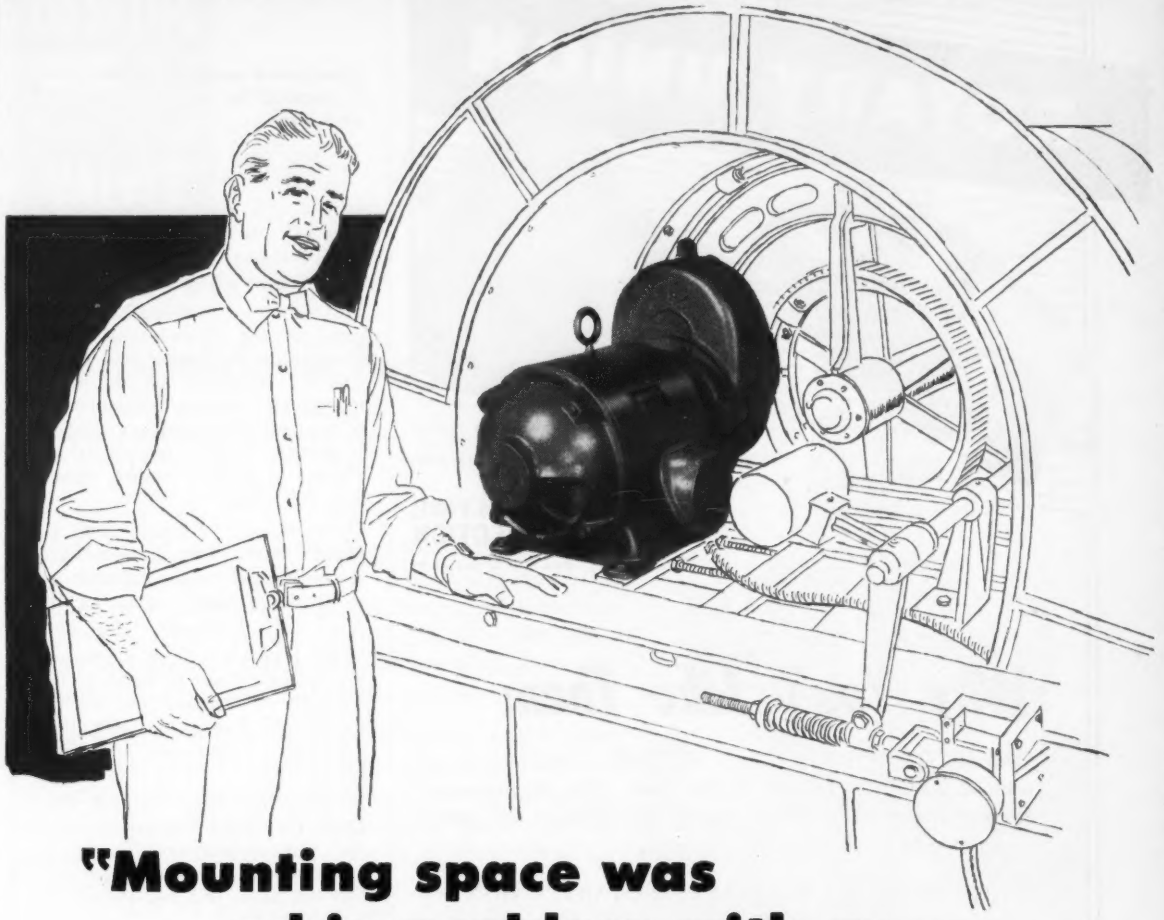
Features: Fitting is said to be shock-absorbing and vibration-fatigue proof. Elimination of any metal-to-metal contact prevents leakage or breakage in joints from severe or sustained vibration. Flexibility makes it unnecessary to obtain exact alignment of tubes to be coupled. Even if tube is moved through an arc up to five degrees, fitting provides a strong union and leakproof seal.

Tests have shown that, when only finger tightened, fittings will withstand pressures up to 4000 psi. When wrench tightened, they will sustain pressure resistance beyond that of the tube itself. Temperatures ranging from minus 70 to plus 400°F can be handled for special application.

Description: Fitting comprises a compression nut, housing a synthetic rubber seal fixed to the tube by a metal ferrule. Sufficient tube clearance is provided in the connection and nut to insure against metal contact between the tube and fitting. No flaring of tubing is necessary.

Tightening the nut places the entire seal under compression, with the rubber ring acting as a cushion. A self-locking ferrule may be used for pressures up to 1000 psi, but a fixed ferrule is recommended for critical applications.

(Sealastic All-Purpose Fittings are manufactured by Chicago Forging & Mfg. Co., Dept. CP, 2000 Southport Ave., Chicago 14, Ill. . . . or for more information check CP 8712 on handy Reader Service slip, pages 2 and 3.)



"Mounting space was a big problem with us—

now we use *Life-Line* GEARMOTORS"

"There isn't much space left for mounting a geared drive by the time we squeeze in all the other components of this machine. We find that an integral-type gearmotor is a must and that a Life-Line Gearmotor, in particular, offers the best solution.

"These Life-Line Gearmotors take up less space than any other form of drive we have tried, such as: chains, belts, open gears or coupled speed reducers.

"Whenever we have a speed reduction drive problem we call in the local Westinghouse representative for consultation. I'm sure you'll find his assistance valuable also."

For complete descriptive literature on Life-Line Gearmotors, write to: Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-07314

When inquiring check CP 8713 on handy form, pgs. 2-3

ROTARY UNION

(Reg. Trade Mark)

TYPE "FSG" ROTARY UNION

(Flange syphon type with all-graphite bearing construction)

TYPE "S" ROTARY UNION

A REVOLVING STEAM CONNECTION

Pipe sizes ¼" through 3"

Why You'll Like Them

SIMPLE TO INSTALL: Each ROTARY UNION is a self-contained unit with built-in flexible hose. This eliminates complicated and space-consuming piping and brackets and permits installation in a few minutes.

ECONOMICAL TO MAINTAIN: ROTARY UNION construction keeps stress and strain from moving and sealing parts. Many have been operating perfectly for three years or more without requiring mechanical maintenance of any kind.

VALUABLE ENGINEERING SERVICE: There are 40 standard types and sizes of ROTARY UNIONS for ordinary applications such as Steam up to 150 PSI, Hot Oil to 500° F, Coolants, Air, Gases, Water, Brine, and Alternate Mixtures at speeds up to 1000 RPM. Factory engineers are available at all offices to recommend the right unit for your purposes or to work out unusual sealing problems. Please call our nearest office or write Dept. 3C for our catalog.

The ROTARY UNION costs no more than ordinary connections.

"WHERE *Good Connections* COUNT"*

*Reg. U.S. Pat. Off.

PERFECTING SERVICE COMPANY

332 Atando Avenue (Home Office and Factory) Charlotte, N. C.

Atlanta, Chicago, Cleveland, Philadelphia, Providence, New York, Montreal, Toronto

When inquiring check CP 8714 on handy form, pgs. 2-3

Powdered asphalt paint is applied by brush or spray . . .

mix only what is required — save the rest

Uses: As protective coating for chemical plants, refineries, galvanized buildings, oilfield equipment, tanks, and similar structures.

Features: Powdered asphalt paint is not wasted, since only required amount need be mixed and the remainder can be stored indefinitely without decomposing or hardening in container. Coating is reported to offer exceptional resistance to weather, smoke, fumes, and soil acids.

Description: Baromix is an asphaltic base paint in powdered form. Mixed with kerosene to required consistency, it can be applied with brush or spray gun.

When properly applied, it provides a permanent bond to wood, metal, concrete, or composition. Packed in one and five gallon sizes, it is available in aluminum and three other colors.

(Product of Berry Asphalt Co., Dept. CP, Magnolia, Ark. . . . or for more information check CP 8715 on handy Reader Service slip, between pages two and three.)

Gives helpful hints on floor care

Twenty-eight-page bulletin features valuable tips on floor care and contains information regarding latest developments in floor maintenance materials. Booklet gives maintenance departments a helpful guide to follow regarding selection of proper material for each type of floor.

Covering 64 major floor maintenance problems, bulletin presents facts about care of asphalt, cork, ceramic tile, rubber, concrete and wood floors. It tells how to maintain a waxed surface, avoid hard water troubles, choose the right soap, and when and how to seal a floor.

"101 Hints on Better Floor Care" is issued by Huntington Laboratories, Inc., Dept. CP, Huntington, Ind. When inquiring specify CP 8716 on handy Reader Service slip, between pages two and three.

. . . WITH SPO AIR VIBRATORS

Don't let bins become bottlenecks! Keep materials flowing and production moving with **SPO** air vibrators. These powerful low-cost units assure steady, jam-free flow of powdered or granular materials from bins, hoppers and chutes . . . prevent clogging and packing.

Write today for Bulletin 50.

SPO vibrators feature a special corrosion-proof bronze alloy cylinder liner which assures full-power starting, high-speed operation, low air consumption and maximum service life.

1008-SI

SPO INCORPORATED

6531 GRAND DIVISION AVE • CLEVELAND 25, OHIO

When inquiring check CP 8717 on handy form, pgs. 2-3

PUMP *Liquids, Gases Solids in Solution*

VARIABLE From ZERO to MAXIMUM

No Corrosion...No Contamination

For inexpensive laboratory pumping of any liquids, gases, or solids in solution, the SIGMAMOTOR — used with the Zero-Max Torque Converter — is receiving wide acceptance. Automatic "fingers" provide pressure on flexible tubing for moving the fluid. The Zero-Max provides full torque conversion from zero to maximum speed ranges. Speed settings are accurately repeated every time.

SIGMAMOTORS can be used for small flows or proportional flows of two or more liquids. Flow rates range from 0 to 30 gallons per hour. Quickly adaptable to different solutions.

WRITE today for details on how SIGMAMOTOR and Zero-Max can render economies in your pumping jobs.

SIGMAMOTOR Inc.

18 North Main Street • Middleport, N. Y.

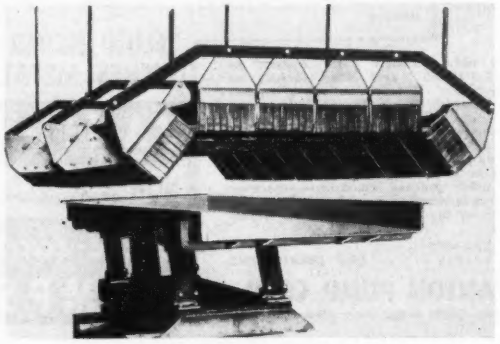
When inquiring check CP 8718 on handy form, pgs. 2-3

Direct radiation feature eliminates necessity of reflectors on infra-red units

Uses: For baking, drying, and heating processes requiring use of infra-red heaters.

Features: Design of heating panels eliminates need for reflectors since units heat by direct radiation, not by reflection. Panels heat up almost instantaneously; full radiation possible within 60 seconds.

Description: Infra-red radiant heating panels are made with from 2 to 8 of the flat surface elements backed up by thermal insulation securely mounted to a steel box type frame equipped with mounting flanges. Elements won't arc through the sheath. Backing insulation is reported to produce a much



No reflectors required

greater heat return than reflectors and never requires cleaning. Heater units operate equally well on either AC or DC. Panels can be set up in various arrangements.

(Development of the Syntron Co., Dept. CP, 110 Lexington Ave., Homer City, Pa. . . . or for more information check CP 8719 on handy form, pages 2 and 3.)

Announce vinyl plastic electrical tape . . .

having tensile of 20 lb/in width, good abrasion resistance and low-temp adhesion

Uses: Tape for electrical insulating applications.

Features: Has tensile strength of 20 lb/in width, good abrasion resistance, and good adhesion at low temperature. Dielectric strength is about 10,000 v.

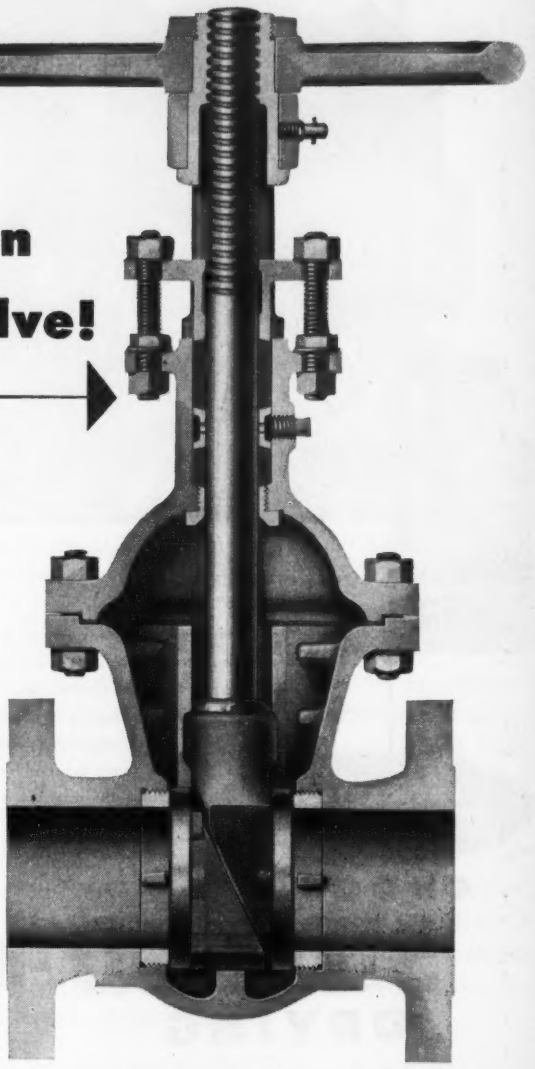
Description: Royalastic is a black, vinyl plastic tape that maker reports is not affected by sunlight, and has no corrosive effect on electrical conductors. Resistance to water, acids, alkalis, oils, and aging is said to be excellent. Tape base is 6 mil thick (7 mil including pressure-sensitive adhesive). It is available in 30- or 66-foot rolls, ¾" wide, and also in 10-foot rolls ½" wide.

(Product of the United States Rubber Company, Dept. CP, Rockefeller Center, New York 20, N. Y. . . . or for more information check CP 8720 on handy form, pages 2 and 3.)

DARLING VALVES

FOR PLUS VALUES, JOB-PROVED AGAIN AND AGAIN

Valve body distortion no problem for this valve!



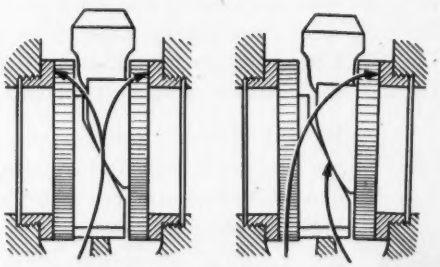
DON'T let costly valve maintenance and down-time headaches get you down! Lick these common valve troubles by installing Darling fully revolving double disc gate valves, with their unique wedging principle. They adjust *automatically* to compensate for valve body distortion—cinching tight, leak-proof closure.

The difference is in the fully revolving double disc, parallel seat principle of Darling valves. Just two plain, interchangeable no-pocket discs and two rugged wedges do all the work. Discs are completely free of pockets. Sediment and scale cannot collect to interfere with their free movement. No links or other devices are needed to hold the discs and wedges together. Any part can be quickly and inexpensively replaced without removing valve from the line.

It's easy to see why Darling valve users are money ahead because of the exceptional service made possible by the Darling design. That's why in plant after plant Darling gate valves are giving longer, trouble-free performance with minimum attention.

Darling features add up to gate valve service at its low-cost best! Send for the free Darling Valve Bulletin, today.

NOTE: Darling gate valves are made in a wide range of sizes, types and constructions, including solid and slotted taper-seat wedge types for all kinds of normal and corrosive services in pressures up to 1500 pounds.



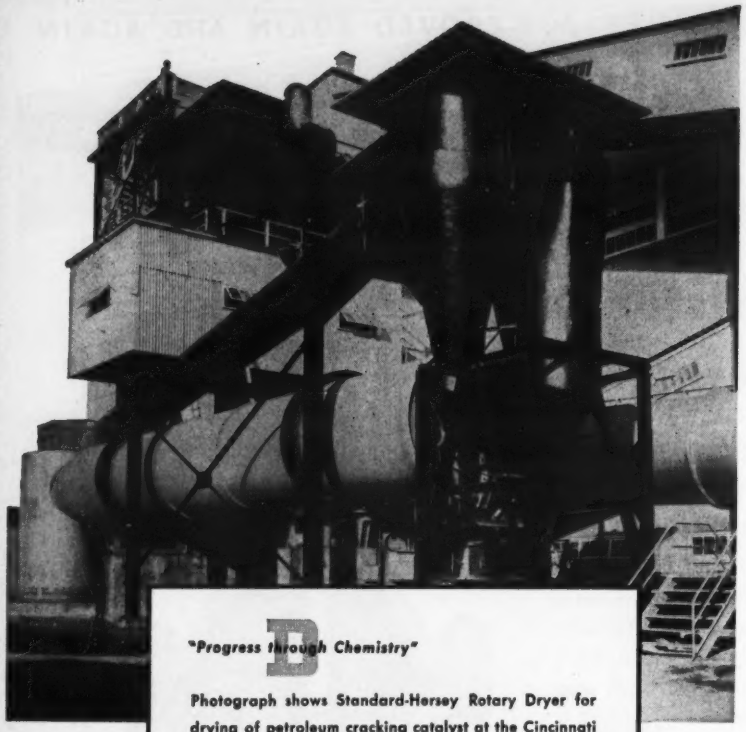
Discs and seats are parallel. *Seats are forced out of parallel by body distortion but discs adapt themselves to give positive closure.* *Radiused face of wedge allows discs to adjust tightly against both seats.*

DARLING VALVE & MANUFACTURING CO.

Williamsport 4, Pa.

Manufactured in Canada by Sandilands Valve Manufacturing Co., Ltd. Galt 19, Ontario

When inquiring check CP 8721 on handy form, pgs. 2-3



"Progress through Chemistry"

Photograph shows Standard-Hersey Rotary Dryer for drying of petroleum cracking catalyst at the Cincinnati Plant of The Davison Chemical Corporation. Patented Standard-Hersey intermediate-feed system makes the unit in reality a combination flash and rotary dryer with most desirable characteristics of each.

THE DAVISON CHEMICAL CORPORATION

CHOOSES

STANDARD-HERSEY DRYING

Each year scores of new names are added to the list of well-known Standard-Hersey Dryer users. The Davison Chemical Corporation is another leader in its field which has joined the swing to STANDARD-HERSEY drying.

For both fabrication facilities and engineering know-how, you can count on STANDARD—always in the forefront of dryer developments for over half a century. It pays to STANDARD-IZE.

STANDARD 50 YEARS 1902 1952 STEEL CORPORATION

Write today for complete, illustrated dryer Bulletin No 531, describing latest "PILOT" drying techniques and the more than 30 types of Standard-Hersey dryers for every process industry need.

STANDARD HERSEY Dryers

STANDARD STEEL CORPORATION

5083 Boyle Ave., Los Angeles 58 • 7 East 42nd St., New York 83

When inquiring check CP 8722 on handy form, pgs. 2-3

CONSTRUCTION

Peanut size, thermostat handles 2.5 amp at 115 v . . .

cylindrical and rectangular models for 0-200°F service

Dimensions of midget thermostats are: rectangular, ¾ x ⅜ x 11/32 inches; cylindrical, 11/32 x ¾ inch diameter. These are designed for precise temperature control and overheat detection in instruments and precision mechanisms. Minimum volume and weight of the thermostats fit them for applications which previously proved difficult.

Temperature control with these instruments depends, of course, on thermal and electrical characteristics of system involved. Usually, however, temperature control to within 1°F is easily obtained. Sensitivity of thermostat itself is better than 1°F. Both models may be adjusted for set point throughout the range from 0 to 200°F by turning the adjustment screw.

Originally designed for use in aircraft, thermostats have high resistance to vibration. They maintain accurate control under vibration conditions of 5 times gravity at frequencies from 50 to 500 cycles per second. Both models are rated at 2.5 amp in 115 volt AC service or 2 amp at 28 volt DC. Both models are also set to open when temperature rises above set point. Several types of mountings are available.

(Miniature Thermoswitch is announced by Fenwal Inc., Dept. CP, Ashland, Mass. . . . or for more information check CP 8723 on handy form, pages 2 and 3.)

West coast now producing 55 alloy castings

Eight-page, 2-color booklet describes maker's shell molding process for producing stainless alloy castings. Until now production was entirely captive. Type 300 and 400, as well as N-155, Inconel, and Hastelloy C orders are now being accepted.

Foundry booklet is issued by Solar Aircraft Company, Stainless Alloy Foundry, Dept. CP, 2200 Pacific Highway, San Diego 12, Calif. When inquiring specify CP 8724 on handy form, pages 2 and 3.

PUMP HIGHLY CORROSIVE FLUIDS & ABRASIVE SLURRIES

NEW POLYETHELENE PUMPS

WITH NATURAL RUBBER, GUM, NEOPRENE, BUNA, HYCAR "NO STUFFING BOXES"

"flex-i-liners"

ESPECIALLY DESIGNED TO HANDLE HCl, HF, NaOH H_2SO_4, DISTILLED H_2O $FeCl_3$, $Ca(OH)_2$ and many others

"FLUID NEVER TOUCHES METAL"

Fluid only contacts outer surface of "FLEX-I-LINER" and inner surface of body block. 35 combinations of rubber and plastic "flex-i-liners" and pump body blocks. Models available from fractional to 20 G.P.M., Vinyl and Compor "flex-i-liners" also available in pumps to 5 G.P.M. capacities. Widely used in chemical, food, pharmaceutical and other process industries—wherever non-contaminating pumping is required. Excellent for slurries. Write for literature.

NO GASKETS NO VALVES SELF LUBRICATING

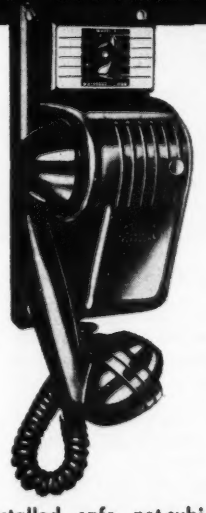
VANTON NON CORROSIVE CONTAMINATING flex-i-liner PUMPS

VANTON PUMP CORP.

Empire State Bldg. Dept. CP3 N.Y., N. Y.

When inquiring check CP 8725 on handy form, pgs. 2-3

EMERGENCY INTERCOM SERVICE INDEPENDENT OF POWER SERVICE



Quickly... easily... install

WHEELER SOUND POWERED Electric TELEPHONES

Power or telephone failure could shut down your intercommunications when MOST needed. But not if you have a Wheeler System, which is INDEPENDENT of outside power, yet requires NO BATTERIES and is ALWAYS ready for use. Easily installed...safe...not subject to deterioration. Handsets, Pair Phones, complete intercom systems. Write us for details.

the WHEELER INSULATED WIRE CO. DIVISION OF THE SPERRY CORP

1112 EAST AURORA STREET, WATERBURY, CONNECTICUT

2GWH52A

When inquiring check CP 8726 on handy form, pgs. 2-3

One-coat enamel doesn't require any primer — easily washed . . .

master guide contains 151 colors to illustrate thousands of possible color combinations

Uses: As protective and decorative coating for interior or exterior walls, shelves, and furniture.

Description: No primer and only one coating is applied to surface. Stains, grease, ink spots, and similar marks can be easily washed off enamel finish.

Description: Satinhide Enamel is companion product to manufacturer's Wallhide Rubberized paint, and is offered in 16 corresponding colors and white. Applied by brush, spray, or roller, enamel does not have characteristic odor of paint. It is said to dry to a hard, uniform finish in just four hours, leaving a tough film which resists marring, scuffing, chipping, peeling, etc. It is furnished in half-pint, pint, quart, gallon, and five-gallon sizes.

To facilitate color blending of finishes, manufacturer has devised a master color guide composed of 151 color chips to show the thousands of color combinations which are possible. To simplify color selection, one has only to determine which color is desired as the dominant hue and then use the table of suggested harmonizing hues, which are also coded to facilitate selection. These harmonies are based on complementary, split complementary, triad, analogous, and monochromatic systems. By arranging the recommended harmony colors with the dominant color chosen, a view of the proposed color arrangement can be obtained.

(Satinhide Enamel and chart are products of Pittsburgh Plate Glass Co., Dept. CP, 632 Duquesne Way, Pittsburgh, Pa. . . . or for more information check CP 8727 on handy form, pages 2 and 3.)

Hand tightening gets hose leakproof at pressures to 5000 psi for hydraulic use . . .

special threads permit continued operation of damaged seal rings until renewal

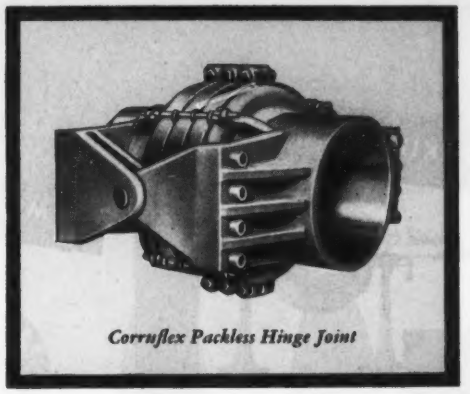
Uses: For hydraulic hose assemblies.

Features: Coupler has proved absolutely leakproof on 1 and 1¼" ID hose subjected to pressures up to 5000 psi, when drawn up hand tight, by use of O-ring packing seal.

Description: With manufacturer's MR hydraulic coupling and adapter union, rings can be easily replaced when worn. If old ring is damaged, "Dryseal" pipe thread permits continued operation until old ring can be replaced. Use of MR couplings allows for proper positioning of the hose lengths. Among features of the coupling-union assembly is the speed and ease of connecting and disconnecting the couplings. Coupling and adapter union pipe threads are required to perform only the mechanical action of tightening parts.

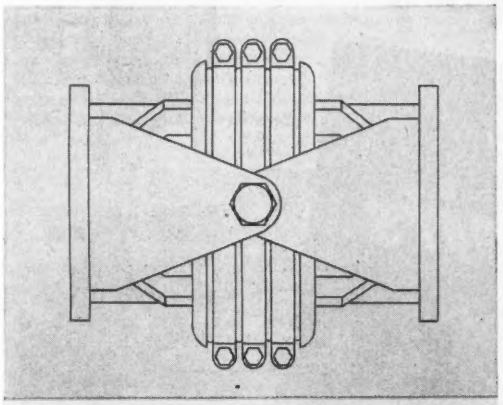
(Development of the Eastman Mfg. Co., Dept. CP, Manitowoc, Wis. . . . or for more information check CP 8728 on handy form, pages 2 and 3.)

PIPE EXPANSION...?



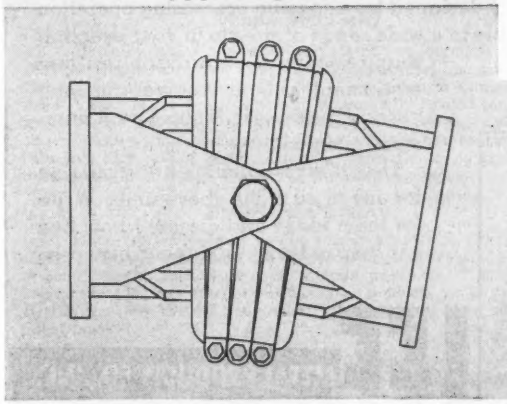
Corruflex Packless Hinge Joint

ADSCO HAS THE JOINT



Hinge Joint in straight position

Hinge Joint in angular position as a result of pipe line expansion



● Because ADSCO makes the world's most complete line of slip and packless expansion joints, it has exactly the right joint to fill each need...The Corruflex Hinge Joint illustrates just one type of ADSCO's packless expansion joints. This joint permits movement in one plane by rotating about its own hinge-pin axis. In the application shown below, Hinge Joints are used to permit the pipe line to expand in three directions without transmitting line pressure thrust to anchors and without causing excessive stresses in the piping. This is a distinct advantage in elevated pipe lines or in cases where there is no structure strong enough to provide for end-anchor thrust... But the Corruflex Packless Hinge Joint is only one joint in ADSCO's complete line of slip and packless expansion joints. Whatever the problem, call an ADSCO representative first... or write for Bulletin 35-51A.

Hinge Joints absorbing axial movement in 3 directions without transmitting pressure thrust

ADSCO ENGINEERED PRODUCTS

EXPANSION JOINTS
HEAT EXCHANGERS
STEAM TRAPS

STRAINERS
SEPARATORS
METERS

AMERICAN DISTRICT STEAM COMPANY, INC.

NORTH TONAWANDA, NEW YORK

Since 1877

When inquiring check CP 8729 on handy form, pgs. 2-3

COOKING KETTLES

MIXING AND BLENDING UNITS

these

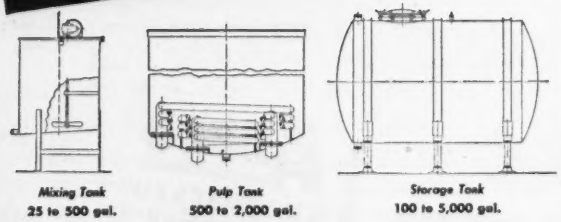
LEE Units

WILL REDUCE YOUR PROCESSING COSTS!

Individually designed for a specific processing operation and available in a wide range of sizes to fit your exacting requirements, Lee corrosion-resistant equipment is built to give you long years of peak performance with minimum maintenance.

Descriptive bulletins are available for any or all of the above units. Write for them today and discover how Lee can help reduce *your* processing costs.

MIXING, COOKING & STORAGE TANKS



LEE METAL PRODUCTS CO., INC.
418 PINE STREET,
PHILIPSBURG, PA.

ALL LEE KETTLES ARE MADE TO A.S.M.E. CODE

When inquiring check CP 8730 on handy form, pgs. 2-3

New

Tells properties, typical uses of hard-facing welding rod

Illustrated folder describes properties, application methods and typical uses of Colmonoy No. 1 hard facing welding rod. The metal's 58 to 63 Rockwell C hardness enables it to resist extreme impact or abrasion, and manufacturer reports that it is available in $\frac{1}{8}$, $\frac{3}{16}$, and $\frac{1}{4}$" yellow-tipped electrodes.

In addition to application methods, folder also illustrates oil refinery catalyst slide valve and stone mill hammers that have been treated with No. 1 alloy. Forty-eight other parts which have been hard-faced with this alloy are also listed.

Form 102 is issued by Wall-Colmonoy Corp., Dept. CP, 19345 John R. St., Detroit 3, Mich. When inquiring specify CP 8731 on handy form, pages 2 and 3.

Multiple tables reveal performance of centrifugal blowers

Visual guide in 23-page catalog shows four types of centrifugal blower described and also illustrates 25 different fans, listing their use, blade diameter range, and catalog number for more specific information. Four blowers described in this publication are intended for exhaust purposes and general air delivery. Six pages of performance data are included for both belt-driven and direct motor drive blowers.

Featured item is the belt-driven utility blower, which is reported to operate quietly, have adjustable speed, as well as optional rotation and discharge. Construction highlights of this unit are dynamically balanced wheels, arc-welded housings, sleeve-bearings or ball-bearings on blower wheels and motor, and the wheel diameter range from 9 to 30 inches.

Cat B-10 describing centrifugal blowers is issued by Hartzell Propeller Fan Co., Dept. CP, Piqua, Ohio. When inquiring specify CP 8732 on handy form, pages 2 and 3.

Device with no moving parts indicates, controls level

Designed to operate with practically any material — wet or dry, liquid or divided solid, conducting or non-conducting, level controller has no moving parts. Therefore, there is no float or other mechanism to fail or require cleaning. In addition to not being affected by viscosity or specific gravity of any material, device does not depend on electrical conductivity — electrode does not necessarily have to touch material being controlled.

Unit will handle practically any level limit control problem or indication problem involving water,

Literature

acids, alkalis, oils, viscous liquids, granular and other free-flowing solids, powders, grain, ore, coal, coke, soot and ash, according to manufacturer.

Features, applications, operation, installation and accessory electrodes are described in 8-page bulletin. Bul F-101 is issued by Fielden Instrument Div., Robertshaw-Fulton Controls Co., Dept. CP, 2920 N. 4th St., Philadelphia 33, Pa. When inquiring specify CP 8733, pages 2 and 3.

Mist eliminators minimize entrainment losses

Designed to improve performance of process equipment, mist eliminators and entrainment separators are easily installed in existing or new equipment, and eliminate entrainment losses. Units are constructed of a special type of fine wire mesh mounted on light weight open-type support grids. Interlocked wire loop construction gives material flexibility resiliency, extensive surface area, light weight and structural strength.

Types of demisters available are: 1) one-piece type, available in circular form only; and 2) sectional type, fabricated to any size or shape required. Liquid droplets, carried as entrainment by vapor streams, are coalesced into large drops on fine wire surfaces of the mesh. These drops then fall off the mesh and return to main mass of liquid in equipment.

Cat 13 is issued by Otto H. York Co., Inc., Dept. CP, 69 Glenwood Pl., East Orange, N. J. When inquiring specify CP 8734, pages 2 and 3.

Offer 1953 buyer's guide to instrument transformers

Contains basic, up-to-date information on the complete line of maker's instrument transformers. Included are ratings, ASA accuracy classifications, and prices of indoor and outdoor potential and current types. Gives listings of ratio and phase-angle tests, together with tables covering mechanical and thermal limits. 102-page GEA-4626F is issued by General Electric Company, Dept. CP, Schenectady 5, N. Y. When inquiring specify CP 8735 on handy form, pages 2 and 3.

Advantages, applications for helical gear drives

Helical gear drives — their advantages, fields of application, and correct selection — are discussed in illustrated 16-page booklet. Book 2451 is issued by the Link-Belt Company, Dept. CP, 307 N. Michigan Ave., Chicago 1, Ill. When inquiring specify CP 8736 on handy form, pgs. 2-3.

A revolutionary new principle in Coolers . . .

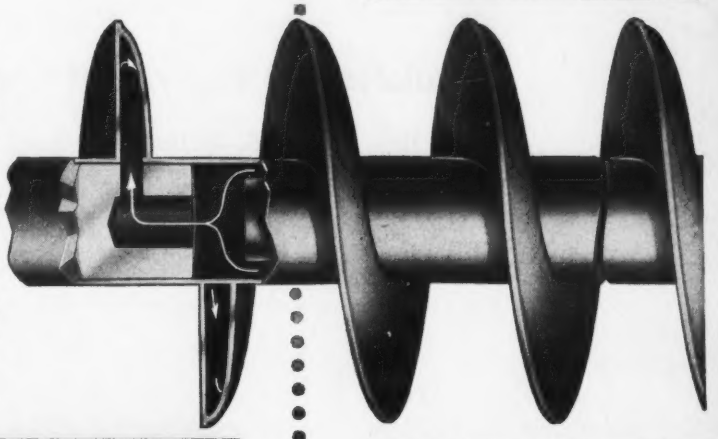
THE **holo-flite*** PROCESSOR

(HOLLOW-FLITE)

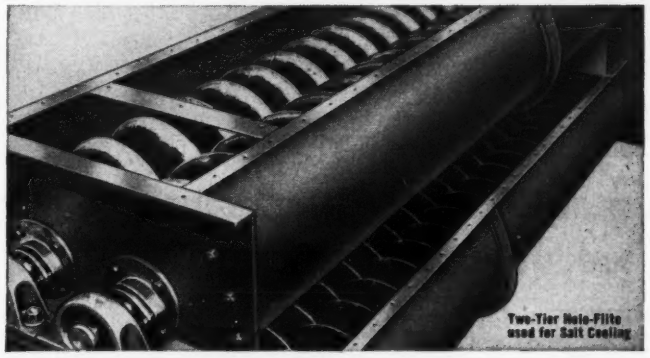
▶ Handles Pastes, Sludges or Solids!

▶ Up to 80% Saving in Space!

▶ Permits Continuous, High Efficiency Operation!



Backed by the same well-known organization that pioneered COTTRELL Precipitators, MULTICLONE Collectors and other leading products, the HOLO-FLITE Processor represents a far-reaching advancement in the science of heat-exchanger design. Widely adaptable to various types of cooling and similar applications in industrial processing operations, the HOLO-FLITE handles powdered or granular solids, moist pastes or slurries with equal facility. Moreover, it requires as little as 1/5th the space of other heat exchangers . . . causes no dust, therefore requires no costly or complicated auxiliary recovery equipment . . . and maintains its uniformly high efficiency under modern continuous-flow operations (no stop-and-go "batching" operations are necessary).



Two-Tier Holo-Flite used for Salt Cooling

Unique Simplicity

Basically, the HOLO-FLITE consists of two or more hollow intermeshing conveyor screws that slowly rotate in a trough or tube. The cooling agent circulates through the hollow flights and shafts of the conveyor screws while the product itself "flows" in the trough where it is constantly rotated into, around, over and under the moving heat-exchange surfaces. The continuous mixing, turning, folding action causes a constant change of contact with the heat-exchange surfaces and results in a high rate of heat transfer. Yet the action is so gentle that there is no dusting and little, if any, abrasion of crystalline particles.

Unlimited Capacity

HOLO-FLITE Processors can be readily adapted to virtually any capacity requirement and are in daily operation on such varied products as sand, cement, cottonseed cake, soybean meal, borax, salt, sugar, baby foods, and many other products. Cooled products can be packaged directly from the HOLO-FLITE discharge, saving time, space and additional handling.

Be sure to investigate HOLO-FLITE savings before you install heat-exchange equipment. To insure maximum operating efficiency at low overall cost, each installation is individually engineered to the job using basic stock-size elements. Contact the nearest Western Precipitation office for further details on the revolutionary HOLO-FLITE Processor—or write direct!

FREE! New 8 Page Bulletin describing HOLO-FLITE features and applications will gladly be sent on request!

*Reg. T.M.

A FEW OF MANY HOLO-FLITE ADVANTAGES

WIDE ADAPTABILITY: HOLO-FLITE handles fine-grained, crystalline or powdered solids, pulps, pastes and slurries with equal ease. Heat transfer agent can be refrigerant, cooled or ambient water, or other fluids to provide a wide range of processing temperatures.

SPACE-SAVING COMPACTNESS: Because of its large active heat-transfer surface per cubic foot of space required, the HOLO-FLITE requires only a minimum of space—is 5 to 6 times as compact as other equipment of comparable capacity!

LOW POWER REQUIREMENTS: HOLO-FLITE conveyor screws rotate slowly—usually only 1 to 12 r.p.m. Further, multiple tiers can be driven by one motor, assuring low power consumption.

INSTALLATION FLEXIBILITY: The basic HOLO-FLITE unit is two intermeshing screws in a single trough, but four or six screws per trough can also be installed. Moreover, any number of troughs can be "tiered" on top of one another—trough lengths can be varied from 8 to 20 ft.—screw diameters can be varied from 7" to 16"—to provide virtually any desired capacity in a minimum of space!

Write for full details on the many savings the HOLO-FLITE *Processor can bring to your particular applications.*

WESTERN Precipitation CORPORATION

ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

Main Offices: 1023 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA

CHRYSLER BLDG., NEW YORK 17 • 1 N. La SALLE ST. BLDG., CHICAGO 2

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PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

When inquiring check CP 8737 on handy form, pgs. 2-3

Calculation of Equivalent Length of Fittings

Part II – Welded, Miter, and Socket-Welded Fittings

By JACQUES R. LaPOINTE
Pittsburgh Coke & Chemical Company
Edited by D. S. DAVIS
Professor of Chemical Engineering, Virginia Polytechnic Institute

Part II

Nomographs for rapid calculation of equivalent lengths of threaded fittings appeared in December CHEMICAL PROCESSING. Nomographs presented in this second part deal with welded and socket-welded fittings (Fig 5) and miter fittings (Fig 6), giving equivalent length directly in feet of Schedule 40 pipe.

Fittings to which Nomographs Apply

Tees	45° Elbows
90° Elbows	60° Elbows
2-90° Elbows	90° Smooth Bends
3-90° Elbows	Valves*

* See December CHEMICAL PROCESSING

Typical Examples

A 4-inch diameter pipe system of schedule 40 pipe has the following welded fittings: 6 elbows (R/D =1), 2 smooth bends (R/D = 6), and 7 tees. What is the equivalent length of pipe added to the system by these?

Find points as shown in key. Fig 5 gives an answer of 135 feet of 4-inch schedule 40 pipe as equivalent length.

What equivalent length of 4-inch schedule 40 pipe is added to a system where 6 90°-elbows, 2 2-90° elbows, and 7 45°-elbows are installed? These are miter fittings.

Fig 6 shows that 180 feet of pipe would be equivalent to resistance added by these miter fittings.

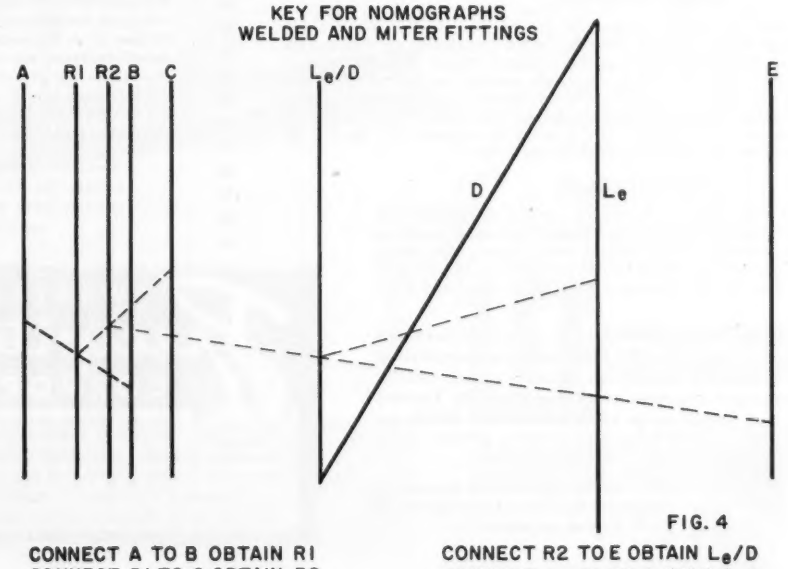
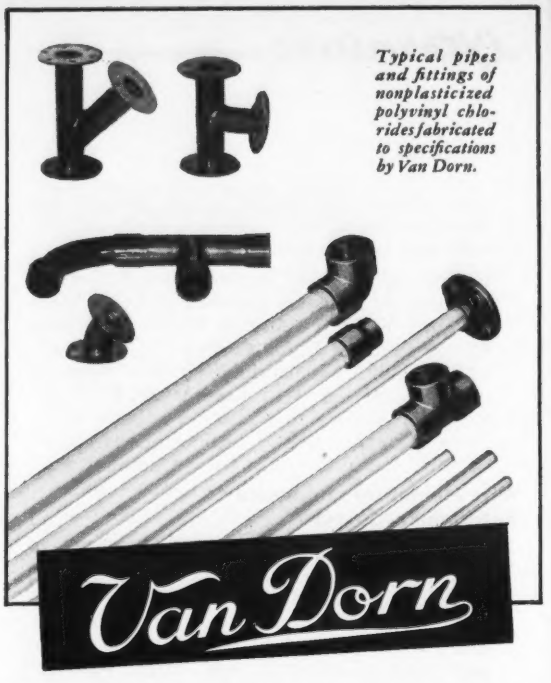


FIG. 4



Typical pipes and fittings of nonplasticized polyvinyl chlorides fabricated to specifications by Van Dorn.

INDUSTRIAL PLASTICS OFFER YOU –

✓ High Resistance to Acids & Alkalies

✓ Tensile Strength of Aluminum, with one-half its weight

✓ Readily Formed, Machined, Drawn Molded or Welded

AVAILABLE FORMS

SHEETS . . . .1/32" through 1"
PIPE . . . . .½" through 4" diameter (10 ft. lengths)
ROUND BARS . ¼" through 2" diameter (10 ft. lengths)
WELDING ROD. ⅛" and 3/16" diameter

TYPICAL APPLICATIONS

Van Dorn fabricates its rigid nonplasticized polyvinyl chlorides into such products as: Ducts, Hoods, Chemical Tanks, Tank Liners, Plating Racks, Fume Stacks and Piping.

WRITE FOR ILLUSTRATED BULLETIN AND SPECIFICATIONS

INDUSTRIAL PLASTICS DIVISION

THE VAN DORN IRON WORKS CO.

2681 East 79th Street • Cleveland 4, Ohio

When inquiring check CP 8738 on handy form, pgs. 2-3

Booklet gives information on microfilming service

Eight-page bulletin outlines step-by-step operation of seven-point service for placing records on microfilm. Service includes analysis of records to be filmed, preparation of records for filming, certified microfilming, film indexing, permanent processing, thorough inspection, and indexing of storage cartons for filmed records.

Additional services and accessories of use in handling and reading of filmed records are illustrated and described.

Bul BSD-5 is issued by Remington Rand, Inc., Dept. CP, 315 Fourth Ave., New York 10, N. Y. When inquiring specify CP 8739 on handy form, pages 2 and 3.

Developments in instrumentation promote centralized control

Recent developments and expansion in field of instrumentation — controllers, recorders and control components — are facilitating use of centralized control and panelboard installations in various aspects of process control. Such items as mercuryless differential pressure transmitters, indicating differential pressure transmitters, pressure transducers, electronic temperature transmitters and inductance bridge transmitters and receivers are aiding in use of these control panels.

Versatility of various control components and panel engineering have permitted panelboards to be installed in a variety of locations. Some of these installations and applications are illustrated in 32-page informative bulletin. Topics of discussion include system versatility, pneumatic transmission, electric transmission, pneumatic receivers, valve position and level indicators, pneumatic controllers, electric controllers, typical control systems, panel engineering and typical engineered panels. Photos, schematic diagrams and drawings show interesting details of various items of equipment and installations.

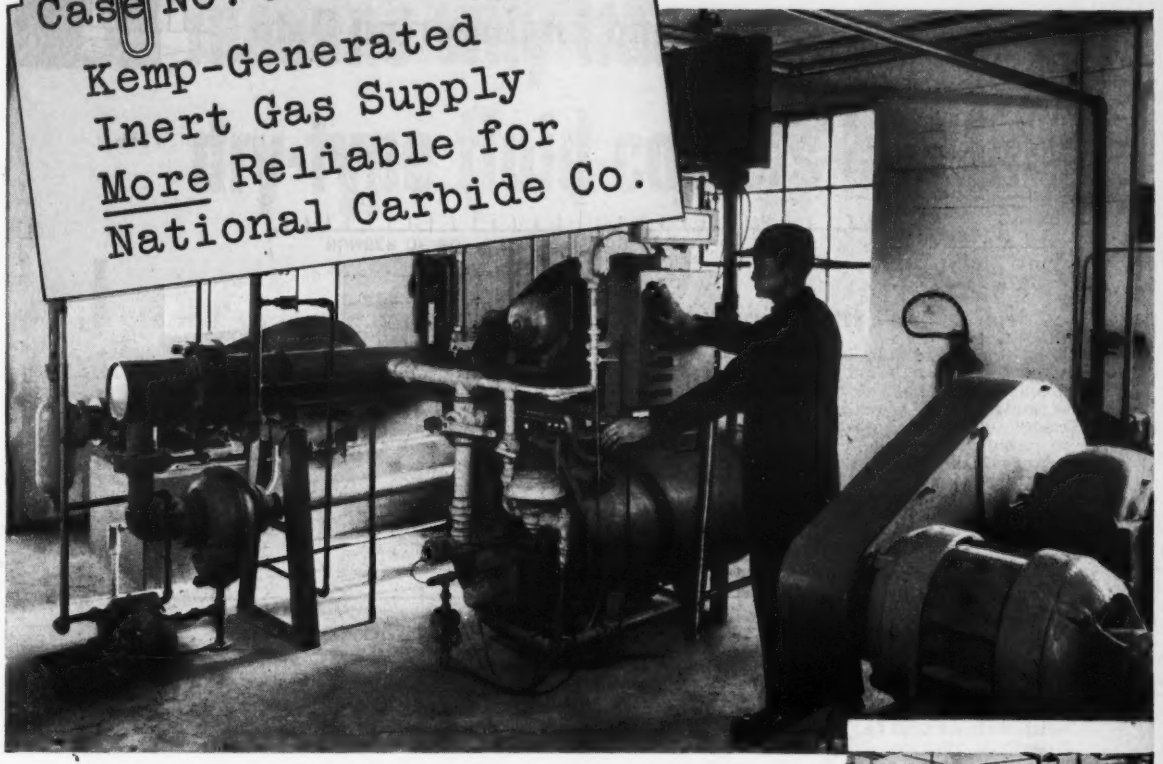
Bul 85-20 is issued by Station 40, Brown Instruments Div., Minneapolis-Honeywell Regulator Co. Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 8740 on handy form, pages 2 and 3.

Fluid contacts stainless only in solenoid valve

Stainless steel solenoid valves, for automatic or remote control, are described in bulletin. Valve construction is rotary shaft type, with external solenoid, so that all parts in contact with fluid are stainless steel. Suggested uses: discharging weigh tanks, controlling measurement of liquids, drum filling, emergency shut-off.

Bul 6100 is issued by R. G. Laurence Co., Dept. CP, 43 Highwood Ave., Tenafly, N. J. When inquiring specify CP 8741 on handy form between pages two and three.

Case No. 56
Kemp-Generated Inert Gas Supply More Reliable for National Carbide Co.



How National Carbide meets the acetylene needs of 2 giant synthetic rubber plants

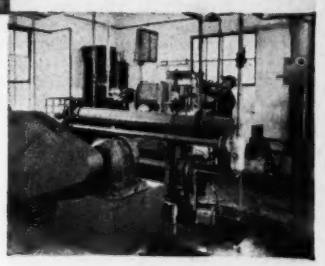
Supplying acetylene gas for both nearby B. F. Goodrich and du Pont plants is a full time job for the National Carbide Co. at Bell's Lane, Louisville, Kentucky. To make the job even tougher, highly explosive acetylene requires careful purging from its initial calcium carbide stage through ultimate pipeline delivery. To solve this problem, National Carbide formerly relied on its own supply of pure nitrogen. But demand soon far exceeded supply. The next step was the installation of 2 Model MIHE, Kemp Inert Gas Generators. (See above.)

Kemp "fills the bill"

By installing these Kemp Generators, National Carbide assured a dependable supply of inerts. But equally important to its overall operation is the ability of Kemp equipment to deliver a chemically clean inert at a *specific analysis* . . . without fluctuations *regardless of demand*. As Mr. Astor Brown, Works Manager, states, "the equipment is standing up well . . . no trouble . . . and meets our needs very satisfactorily." In addition, each Kemp Generator is engineered for fast-starting, easy operations that save both *time* and *money*.

Kemp Designs both flexible and versatile

Like National Carbide, you can't go wrong when you specify Kemp. Every Kemp design includes up-to-the-minute fire checks and safety devices. And every Kemp design features the Kemp Industrial Carburetor (uses ordinary gas right from the main) to assure you complete combustion . . . without tinkering . . . without waste. Let us help you with your blanketing or purging problems, too.

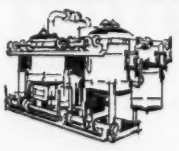


Here Mr. J. S. Carey, Acetylene Plant Foreman, is shown lighting the burner on Kemp Generator at Louisville plant. To the right rear can be seen a Kemp Oriad Dryer where inerts are dried after passing through specially designed inert cooling system.

For more complete facts and technical information, write for Bulletin I 10 to: C. M. KEMP MFG. CO., 405 East Oliver Street, Baltimore 2, Maryland.

KEMP OF BALTIMORE

INERT GAS GENERATORS



CARBURETORS • BURNERS • FIRE CHECKS
METAL MELTING UNITS • ADSORPTIVE DRYERS
SINGEING EQUIPMENT

When inquiring check CP 8742 on handy form, pgs. 2-3

36b

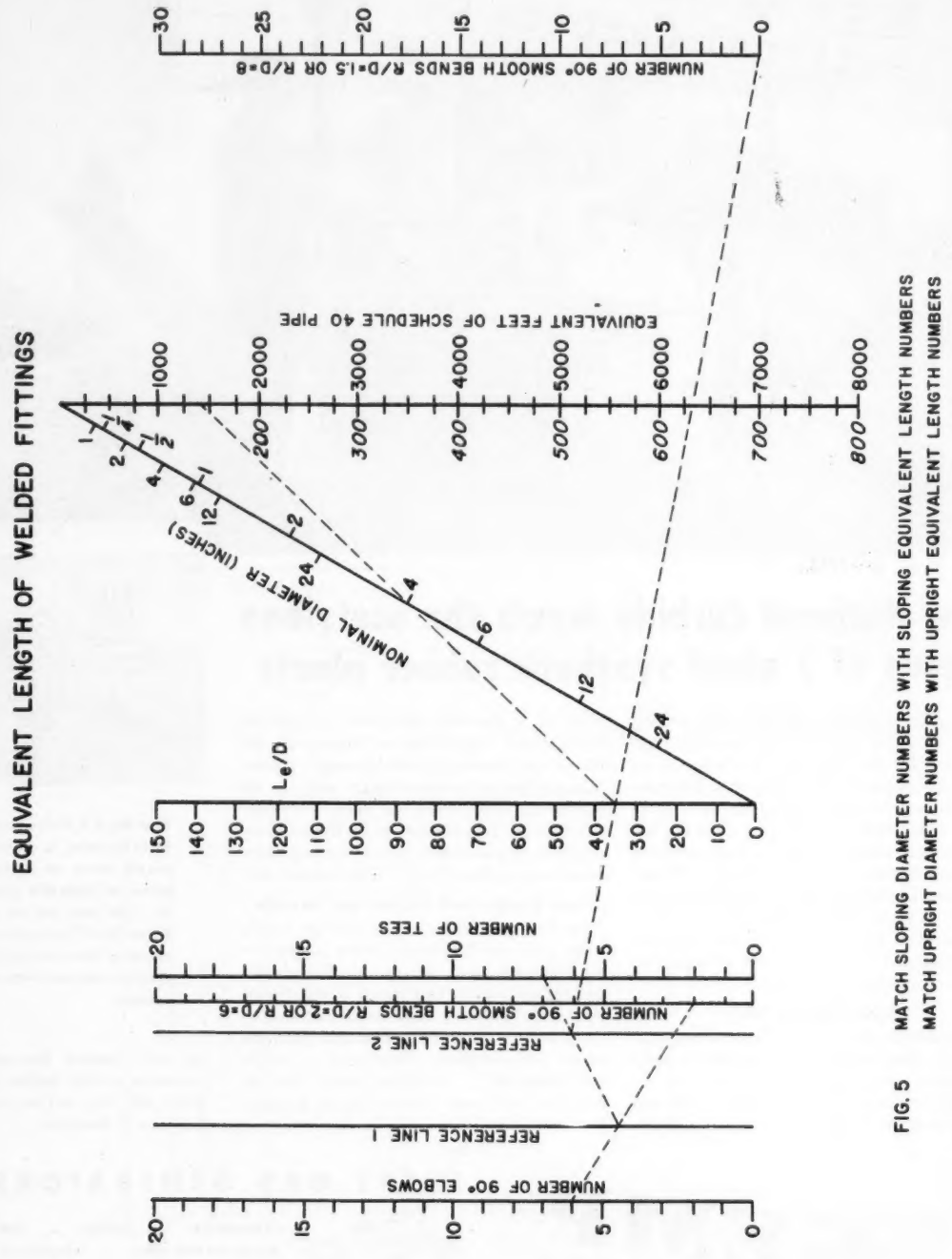
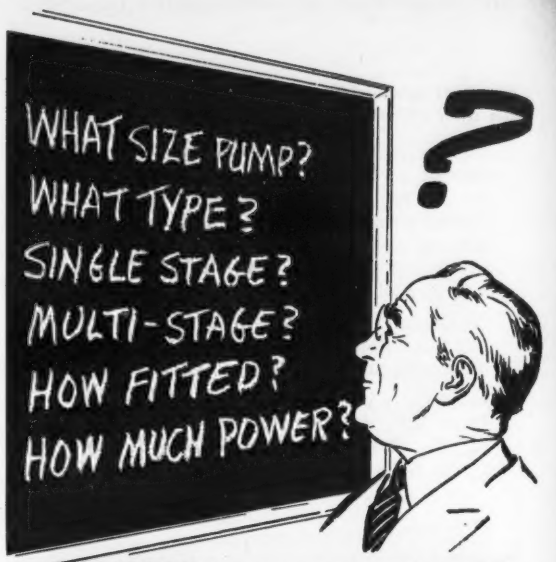

EQUIVALENT LENGTH OF WELDED FITTINGS
NUMBER OF 90° SMOOTH BENDS R/D=1.5 OR R/D=8
EQUIVALENT FEET OF SCHEDULE 40 PIPE
NOMINAL DIAMETER (INCHES)
Le/D
NUMBER OF TEES
NUMBER OF 90° SMOOTH BENDS R/D=2 OR R/D=6
REFERENCE LINE 2
REFERENCE LINE 1
NUMBER OF 90° ELBOWS

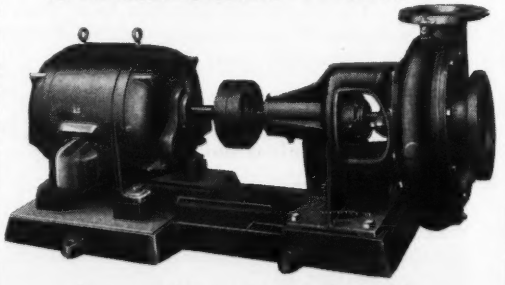
FIG. 5 MATCH SLOPING DIAMETER NUMBERS WITH SLOPING EQUIVALENT LENGTH NUMBERS
MATCH UPRIGHT DIAMETER NUMBERS WITH UPRIGHT EQUIVALENT LENGTH NUMBERS



IF **PUMPS** ARE YOUR PROBLEM, CALL IN A **WEINMAN** SPECIALIST...

Selection of the right pump to handle a specific liquid handling problem, calls for skilled judgment backed by years of experience. That's why thousands of pump users have put their pump selection problems in the hands of a Weinman centrifugal pump specialist. For more than 50 years these Weinman specialists have helped pump users in every type of industry, and with every kind of liquid handling problem to get the results they wanted to put their pumping operations on a paying basis.

Basic design, precision manufacture and progressive research make Weinman centrifugal pumps first choice for low initial cost, year-round operating efficiency and virtually maintenance-free service. So, take your fluid handling problems to a specialist —your nearby Weinman representative, who KNOWS pumps. Write, wire or phone for his recommendations . . . TODAY.



Representatives in principal cities

Built by Centrifugal Specialists

The WEINMAN Pump Mfg. Co.

294 SPRUCE STREET • COLUMBUS 8 • OHIO

When inquiring check CP 8743 on handy form, pgs. 2-3

Provide controlled draft for boilers, furnaces

Induced draft bifurcator fans provide controlled draft for boilers and furnaces at all times. They permit boilers to operate at maximum efficiency at any load, regardless of weather conditions. Fans consist of a motor-driven axial-flow fan in a divided housing. Motor is in an isolated chamber around which flue gases are by-passed, so that motor always remains clean, easily accessible and within safe temperature limitations.

Illustrated bulletin carries specifications and dimensions as well as details of construction. Bul DB-32-52 is issued by DeBothezat Fans Div., American Machine and Metals, Inc., Dept. CP, East Moline, Ill. When inquiring specify CP 8744 on handy form, pages 2 and 3.

Illustrated bulletin covers temperature transmitters

Temperature transmitters, designed to operate in conjunction with a controlling and recording system, are described in a 4-page illustrated booklet. Available in 22 specific ranges in 4 different Fahrenheit spans and 24 specific ranges in 4 different Centigrade spans, transmitters consist of: 1) a resistance thermometer element, complete with thermowell and connecting head; 2) a thermometer adapter unit; and 3) a range card mounted in thermometer adapter unit which determines the temperature range.

Illustrated with photos, line drawings and schematic diagrams, bulletin shows principle of operation and essential specification data. Available temperature spans, over-all and mounting dimensions and installation information are also included.

Bul A-706 is issued by The Swartwout Co., Dept. CP, 18511 Euclid Ave., Cleveland, Ohio. When inquiring specify CP 8745 on form, pages 2 & 3.

Rust preventive coatings protect and beautify

Rust preventive coating include processed fish oils and essential rust-inhibiting pigments. Possessing special penetrating qualities due to their low surface tension, these fish oils cause deep penetration into pores of the surface, resulting in a firm, elastic, decorative film. Coatings are available in all colors, aluminum, and white.

Sixteen-page bulletin shows how coatings stop rust in many applications, and features 73 color chips of various types of coatings. Complete instructions for surface preparation and application of primers, machinery and implement finishes, sealers, thinning oils, and floor and masonry coatings are included.

Bul 252 is issued by Rust-Oleum Corp., Dept. CP, 2799 Oakton St., Evanston, Ill. When inquiring specify CP 8746 on form, pages 2 & 3.

4 reasons why Trane dry-type fluid coolers last longer

1 Correct metal selection

A wide variety of types of metals are available for highly corrosive applications. Coils can be supplied in combinations of cupro nickel, admiralty, red brass, copper, aluminum, monel, steel, stainless steel and many other special metals. TRANE engineered products have solved corrosion problems of all types, yet obtained maximum heat transfer and maximum life from the fluid circuit.

2 Permanently bonded fins

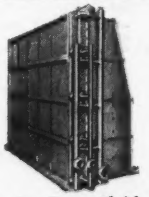
In constructing the Extended Surface Coil—heart of the fluid cooler—TRANE bonds fin to tube *mechanically*. This bond is as permanent as the metals that form it and as strong as though fin-and-tube were one. Heavy support plates are used to reinforce and protect the coil and prevent tube sagging. And the exclusive TRANE Guide Flange cradles the coil to permit expansion within casing.

3 Extra-rugged construction

Framework of the TRANE Fluid Cooler is so strong it can be used for stationary or portable installation *without additional bracing*. Its simple structural design permits fastest possible erection. Yet it is more than strong enough to support core and accessories and withstand wind and shock load. Finish on the TRANE Fluid Cooler is a rubber-base paint that's completely weatherproof.

4 Freedom from vibration

TRANE Fluid Coolers run smoothly . . . quietly. They stay sound and tight longer because TRANE engineers have virtually eliminated the causes of vibration. Here's how: The variable-pitch fans are dynamically balanced. Solid, oversized fan shaft is firmly mounted in giant thrust bearings. Drive components are aligned at the factory and shipped assembled. Orifice ring is designed to *match* the fan.



Trane Dry-Type Fluid Coolers can be used profitably in hundreds of ways. Series GC for vertical discharge (shown above) is made in 6 regular sizes with fan diameters ranging from 72″ to 144″.

Jacket water cooling costs are cut to the minimum with the TRANE horizontal air stream Fluid Cooler. Series EC—available in 14 sizes with fan diameters from 18″ to 120″.

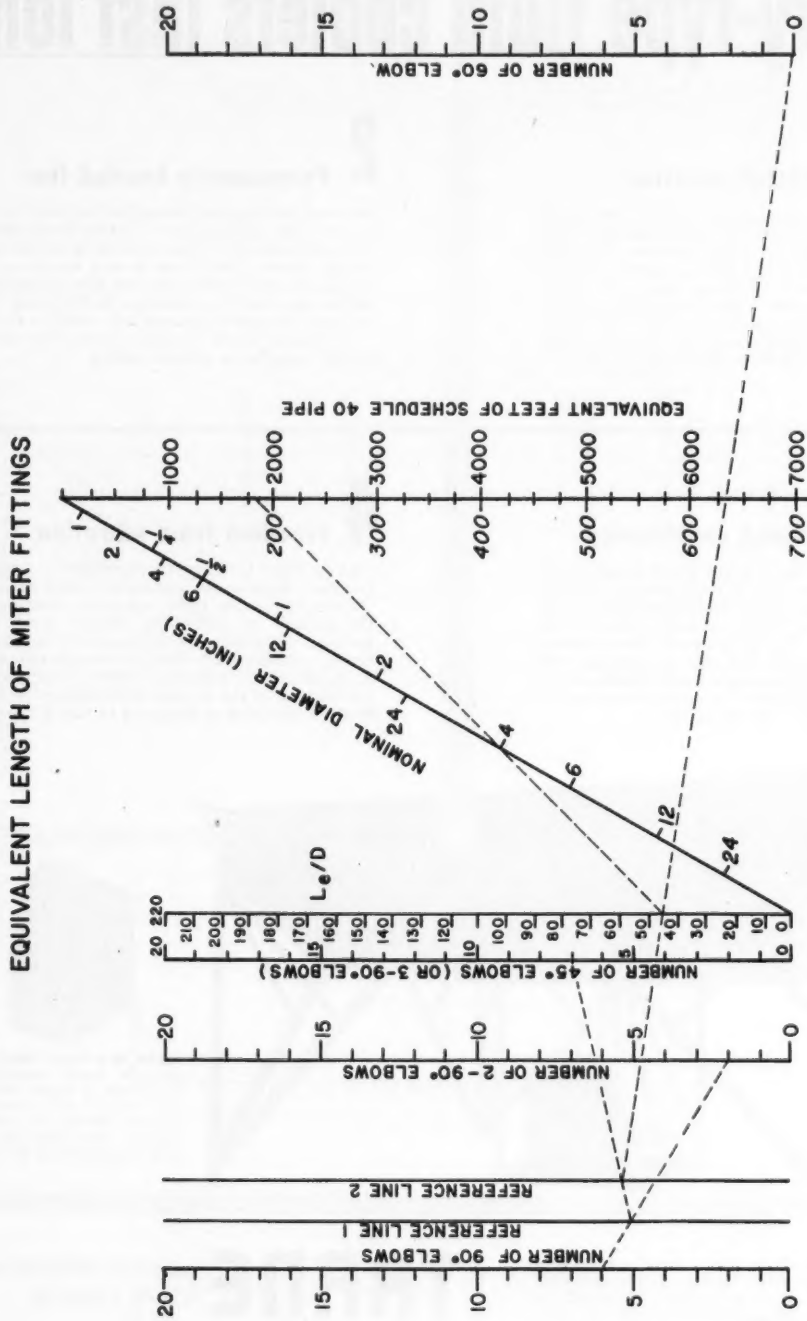
TRANE *pioneers in the science of heat exchange*

The Trane Company, La Crosse, Wis. • East. Mfg. Div., Scranton, Penn.
Trane Co. of Canada, Ltd., Toronto • 80 U.S. and 14 Canadian Offices

MANUFACTURING ENGINEERS OF HEATING, VENTILATING, AIR CONDITIONING AND HEAT TRANSFER EQUIPMENT

When inquiring check CP 8747 on handy form, pgs. 2-3

36c

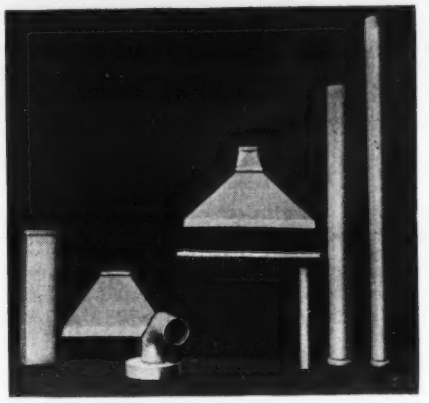

EQUIVALENT LENGTH OF MITER FITTINGS
EQUIVALENT FEET OF SCHEDULE 40 PIPE
NOMINAL DIAMETER (INCHES)
Le/D
NUMBER OF 60° ELBOW
NUMBER OF 45° ELBOWS (OR 3-90° ELBOWS)
NUMBER OF 2-90° ELBOWS
REFERENCE LINE 2
REFERENCE LINE 1
NUMBER OF 90° ELBOWS

NOTE: SMALL SIZE SOCKET WELDING FITTINGS EQUAL TO MITER FITTINGS.

FIG. 6 MATCH SLOPING DIAMETER NUMBERS WITH SLOPING EQUIVALENT LENGTH NUMBERS
MATCH UPRIGHT DIAMETER NUMBERS WITH UPRIGHT EQUIVALENT LENGTH NUMBERS

HERE'S THE *ECONOMICAL* ANSWER TO YOUR ACID-PROOF DUCT PROBLEMS

Put RIGIDON Solid Plastic Ducts to Work in Your Plant For Longer Service Life



Typical Rigidon Solid Plastic Duct Sections Ready to Install

- *Acid Protection Inside and Out.* No need to be concerned about lining failure.
- *Easy to Install.* Although strong as light gage steel, these ducts are light in weight and easy to install.
- *Good Chemical Resistance.* Will resist practically all chemical conditions and high temperatures.
- *Round or Rectangular.* Easy to replace present system.
- *Low Initial Cost.* Standard designs and production know-how results in lower cost to you.

WRITE TODAY
for Illustrated Bulletins
No. 751 and No. 754
on Solid Plastics

Sales Representatives in All Principal Cities

HEIL PROCESS EQUIPMENT CORP.
12901 ELMWOOD AVE. CLEVELAND, OHIO

Other Heil Products Include: Impervious Graphite Heating and Cooling Units • Lined Storage and Process Tanks • Acid-proof Maintenance Materials • Structural Plastics • Jet Agitators

When inquiring check CP 8748 on handy form, pgs. 2-3

All recording charts from one source — house organ confirms facilities

Twelve-page external house organ covers manufacturing facilities, which enable company to supply all recording roll and dial charts. Brief descriptive material and illustrations survey production factors such as the printing of charts from wax-engraved plates, preparation of paper, finishing equipment, storage facilities, etc. Roll charts are produced in widths from 2 to 26″ and lengths from 16 to 1000′. Dial and rectangular charts are manufactured for more than 100 different types of meters, requiring considerable variation in diameter and center hole punching. Bulletin is available from Technical Charts, Inc., Dept. CP, 191 Van Rensselaer St., Buffalo 10, N. Y. When inquiring specify CP 8749 on handy form, pages 2 and 3.

Hydride descaling removes none of the base metal

Unlike pickling, hydride descaling removes none of the base metal, causes no pitting, and acts uniformly on crevices and high-spots alike when employed in descaling of metal surfaces. In scale and sand from metal surfaces quickly and effectively. Moreover, it can be applied to carbon steel, alloy steel, cast iron, chrome stainless steels, nickel-chrome stainless steels, nickel, Inconel, copper, silver and stellite.

Principle of application, advantages, equipment, and chemistry of operation are discussed in 4-page informative bulletin. Photos and line drawings illustrate equipment necessary for proper application of hydride in descaling baths.

"Sodium Hydride Descaling" is issued by Ethyl Corp., Dept. CP, 100 Park Ave., New York 17, N. Y. When inquiring specify CP 8750 on handy form, pages 2 and 3.

Announce German high pressure steam generator

High pressure steam generator, with closed circulation of steam and condensate, which operates at a temperature of 700° F, is announced in six-page bulletin. Package unit, which is manufactured in West Germany, is designed for economical heavy duty operation.

Steam generator is reported to be in successful operation in countries of Western Europe with evaporating and distilling equipment used in manufacture of oils, varnish, glycerine, fatty acids, tar, and other materials of a similar nature. Flow diagram, description, and photographs of unit appear in bulletin.

Bulletin entitled, "High Pressure Steam Generator," describing unit manufactured by Bamag of West Germany, is available from General Industrial Development Corp., Dept. CP, 270 Park Ave., New York 17, N. Y. When inquiring specify CP 8751 on handy form, pages 2 and 3.

IN YOUR PLASTICS PREPARATION...

IS QUALITY ABOVE OR BELOW "PAR"?

DO YOU KNOW WHAT *MULLING* IS?

Watch the practiced technique of a chemist's mortar and pestle—the intensive rubbing and smearing actions—and basically, THAT'S MULLING!

Mulling with a SIMPSON Mix-Muller utilizes a special pair of revolving mullers and plows mounted on a stationary pan. The mullers are adjustable and are supported by rocker arms. This leaves them free to ride on the material, creating a true mulling action as they revolve. The results are thorough, more rapid blending.

...rely on SIMPSON *MIX-MULLERS* FOR ACCURATE CONTROLLED BLENDING

Whether you are a basic producer of raw materials or are producing plastic products . . . the quality and the uniformity of your finished product is greatly dependent upon the care given to the mixing of components.

A simple "smear test," as pictured above, can provide visual proof of quality. Unmixed smears or hard lumps, as shown in the lower smear, mean rejects and waste . . . defective moldings or extrusions . . . or improper color dispersion.

Equipment which is designed to perform the tough job of masticating or kneading viscous plastic material cannot be depended upon to produce the fine dispersal of pigment or plasticizer which could be produced from material shown in the upper smear . . . material which has been *mulled* in a Simpson MIX-MULLER.

Built in 12 sizes from 1/10 to 60 cu. ft. batch capacities, the Simpson MIX-MULLER is widely used for premix and full production in the preparation of plastics and plastic products. They may be equipped for heating with oil, water or steam or for full cool or warm air circulation . . . to meet every mixing requirement.

If you're shooting "under par" on quality . . . investigate controlled mulling with Simpson MIX-MULLERS.

USE OUR FREE LABORATORY SERVICE . . . We have a completely equipped testing laboratory for accurately determining the results of mulling your materials in Simpson Mix-Mullers. A confidential laboratory test will prove what a Simpson can do for you. Write for details—no obligation, of course.

SIMPSON *MIX-MULLER*® DIVISION

NATIONAL ENGINEERING CO., 624 Machinery Hall Bldg., Chicago 6, Ill.
(Not Inc.)

When inquiring check CP 8752 on handy form, pgs. 2-3

Density of Sodium Hydroxide in Concentrated Solution

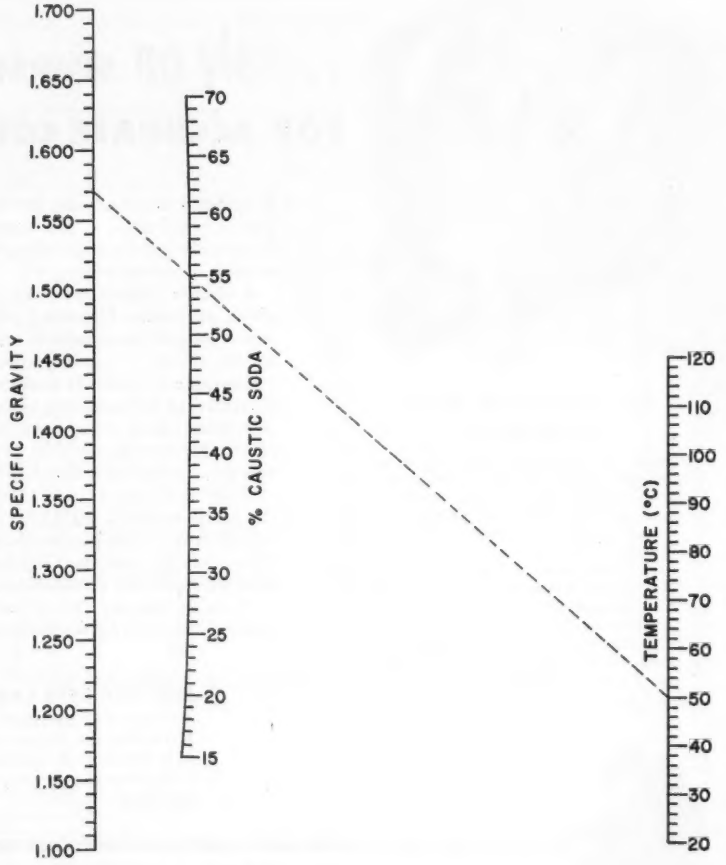
Data Supplied by The DOW CHEMICAL COMPANY
Prepared by CHEMICAL PROCESSING Staff

THIS nomograph is prepared from data on highly concentrated sodium hydroxide solutions. It provides a quick method of estimating solution concentration where density and temperature are known. Nomograph agrees within about ½%(NaOH) of values in tabulated data.

Typical Example

Specific gravity of a sodium hydroxide solution is read as 1.570 at a temperature of 50°C. What is the concentration?

Connecting 1.570 on Specific Gravity scale with 50°C on temperature scale gives a reading of 55% NaOH in solution.



In every Industry . . .

Super-Silvertop
STEAM TRAPS
Stand Out!

CHEMICAL "This plant has had several of your large capacity traps in operation for a number of years and are quite satisfied with them". New York, N. Y.

PAPER PRODUCTS "Approx. 30 traps on wax applicators have been replaced with Super-Silvertop inverted bucket steam traps with net savings in steam of 4,000 lbs. for hour". Augusta, Georgia.

FOOD "Since trapping our kettles with Super-Silvertop Steam Traps we've had a steam savings, had no trouble with the traps, nor have we purchased repair parts". Pittsburgh, Pa.

HOSPITAL "We use your trap altogether. We have 100 to 150 Anderson Traps in use, which we find very satisfactory and reliable". Muskogee, Okla.

DRY CLEANING "These traps really work and do an excellent job with no care whatever". North Tonawanda, N. Y.

LAUNDRY "The 100 Super-Silvertop Traps installed on our presses, tumblers, ironers, etc. work perfectly and are all you claim. The majority have been on line for 5 years and the saving in fuel alone has paid for them". Richmond, Va.

• Steam Trap users in every industry compliment Super-Silvertops for their long-life, condensate-draining and air-venting ability. A masterpiece in steamtrap construction, valve and seat are of a special chrome nickel alloy, developed especially for the corrosion and abrasion conditions in steam lines. The trap can be installed straight-in-line or as an elbow and can be opened for inspection without removing from the pipeline. Cut your steam trap costs by switching to Super-Silvertops

FREE 36-page book, "Solving Steam Trap Problems" gives the complete story on Super-Silvertops and selecting traps for any equipment.

THE V. D. ANDERSON CO.
1932 West 96th St. • Cleveland 1, Ohio

Super-Silvertop
. . . the Engineered Steam Trap

QUALITY STEAM TRAPS SINCE 1886

When inquiring check CP 8753 on handy form, pgs. 2-3

Applying transducers to control problems

Ten pages of technical information about application of power-measurement transducers to process control contain much valuable information. While it does discuss specific applications of transducers in process control, largest part of it is devoted to presenting various available transducers. Five basic approaches to measuring and controlling AC power are discussed; three approaches are given for DC. Circuit diagrams, descriptive material, and simple mathematics are included. Bulletin concludes with a table showing comparative accuracy, advantages and disadvantages of transducers discussed.

Technical bulletin 15-16 is available from Brown Instruments Division, Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne & Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 8754 on handy form, pages 2 and 3.

Provides visual or printed records of almost any physical quantity

Data recorder will furnish visual or printed records of virtually any physical quantity converted into a corresponding voltage. Unit will solve measuring problems dealing with rpm, pressure, weight or force, light intensity, temperature, and many others. Printing numerical data corresponding to voltage converted by various sensing devices, recorder will operate through tachometer generators, thermocouples, photocells, pressure cells, and load cells, for example.

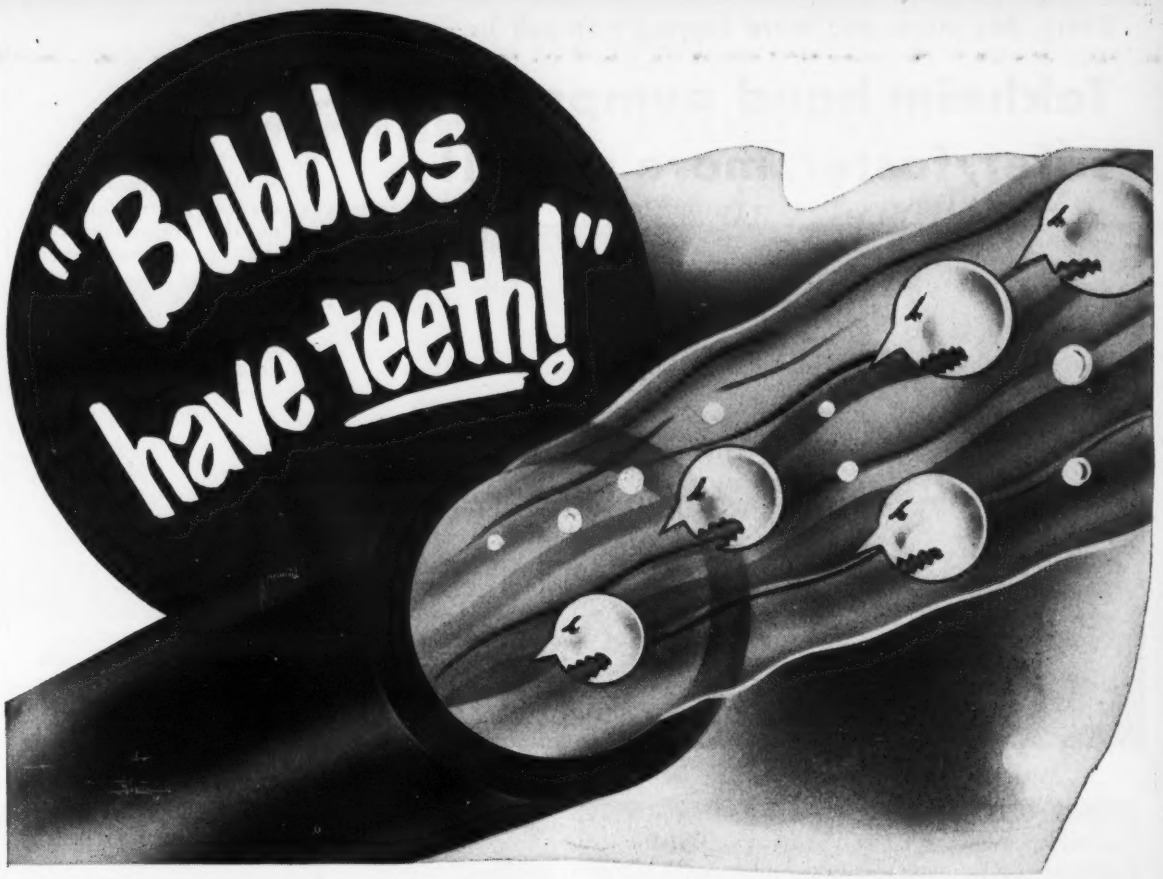
Illustrated 4-page bulletin presents information on features, applications, and principle of operation of the recorder. Bul K-2 is issued by Streeter-Amet Co., Dept. CP, 4101 Ravenswood Ave., Chicago 13, Ill. When inquiring specify CP 8755 on handy form, pages 2 and 3.

Topic of 24-page publication is sewage treatment

How large sewage pumps are motorized, and their function in eliminating pollution of San Francisco Bay and Boston Harbor are told in two feature articles in 24-page publication. A third article tells how plants and animals try to purify polluted streams, but how the sewage plant must help them. Another article discusses "nominal" pull-in torque as an important factor when applying synchronous motors to mixed-flow pumps and other high-inertia loads.

Handy tables simplify the determination of input amperes of 3-phase induction motors (30 to 3500 hp) and synchronous motors (50 to 3500 hp) at full load and at various standard voltages.

"E-M Synchronizer 38 (Sewage Works Number)" is issued by Electric Machinery Mfg. Company, Dept. CP, Minneapolis 13, Minn. When inquiring specify CP 8756 on handy form between pages two and three.



QUITE a number of years ago Revere coined the phrase "Bubbles have teeth." This refers to the fact that what is called air entrainment is highly damaging to condenser tubes. Bubbles carried along with the cooling water set up a strong disturbance in it, disrupting the film that should protect the metal, and actually seeming to eat away the tube. The oxygen contained in the air bubbles also is destructive. Fortunately, the effects of air entrainment on condenser tubes are sufficiently distinctive to permit Revere Research to detect the trouble by examination of short lengths cut from tubes that have failed before their time.

Thus it happens that every once in a while the Research Department in Rome, New York, working through the Technical Advisory Service, is able to say that there is air leaking into a condenser it has never seen, in a far-off state. The problem then is to seal the water system against the entrance of air. This is not always an easy task, and it is one that the Revere Technical Advisory Service is glad to tackle together with the customer if asked to do so. After all, we want our condenser tubes to last as long as possible; that's what makes customers happy, and builds and preserves our reputation as producers of fine tubes.

In one such instance of bubble trouble, the operator, a public utility, could find no visible sign of a leak. Checking and tightening every bolt and seal produced no results. Finally it was decided to put plate glass windows in some of the inspection plates, in order to see what was going on inside. This located the defect, a stream of bubbles being easily seen pouring out of a gasket. The water was flowing past that gasket with sufficient velocity to suck air in.

In another instance, a few samples of failed tubes from an oil refinery (located almost 3,000 miles away from the utility) were sent to Revere's Research Department. The refiner was told that his trouble was due to bubbles. Again, a check of the condenser showed nothing. The water inlet and outlet lines and all gaskets and bolts seemed to be perfectly tight. Here was another puzzler. But once again it seemed plausible to assume that air was being drawn in where water velocity was high enough to create a suction. The search finally went all the way back to the water pumping station, where two cracked castings were located. Air sucked in through two tiny cracks was enough to do a lot of damage; bubbles do indeed have teeth.

Revere will gladly consult with you concerning condenser tubes, their selection, specification, and conditions of use. For condenser tubes and tube sheets in all the usual alloys, see Revere. Send for Free Booklet: "Life Extension for Condenser Tubes."

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

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SEE REVERE'S "MEET THE PRESS" ON NBC TELEVISION, SUNDAYS

When inquiring check CP 8757 on handy form, pgs. 2-3

Every day more and more factory men tell us —

Tokheim hand pumps are safer, faster, more useful!

This new Tokheim double-action hand pump has no equal for speedy, safe handling of liquids. Delivers 20 gallons per minute of most fluids. Stops wasteful dripping and slippery floors. Reduces fire hazard and accidents common to other methods of transfer. With optional diaphragm and body, it handles a wide variety of products. Compare list below with your own needs. UL-approved for petroleum liquids. Available in hose and spout models—for drums, skid tanks and underground installations. Call your dealer, your Tokheim representative, or write the factory for literature.

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Acetates • Alcohols • Aromatic & Chlorinated Solvents • Glycols • Ketones & Ethers • Petroleum Solvents • Plasticizers • Petroleum Products • Ammonia • Ammonia Hydroxide • Cutting Oils Flushing Oils • Lacquer Thinners • Anti-Freezes Castor oil • Caustic Soda Solution • Freon • Glycerine • Turpentine • Water • Wood & Vegetable Oils.

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DESIGNERS AND BUILDERS OF SUPERIOR EQUIPMENT SINCE 1901
1690 WABASH AVENUE, FORT WAYNE 1, INDIANA
Factory Branch: 1309 Howard Street, San Francisco 3, California

When inquiring check CP 8758 on handy form, pgs. 2-3

NEW LITERATURE

How to make up Na dispersions

Four-page bulletin is designed to provide the chemist and engineer with general information on the preparation and handling of sodium dispersions. One of the developments described is a sodium dispersion which can be pulverized to a powder and handled readily in air. Such a dispersion is made with naphthalene or anthracene.

Bulletin also outlines an organic reaction — the preparation of alkyl sodium amides from alkyl amines and sodium in the presence of butadiene. Detailed instructions are given for the preparation of a typical sodium dispersion, and recipes are presented for dispersions in solvents of low, medium, and high boiling range.

Safe handling instructions and specific recommendations for cleaning equipment, handling spills, and proper clothing for work with dispersions are included.

"Sodium Dispersions" is issued by Ethyl Corp., Dept. CP, 100 Park Ave., New York 17, N. Y. When inquiring specify CP 8759, pages 2 and 3.

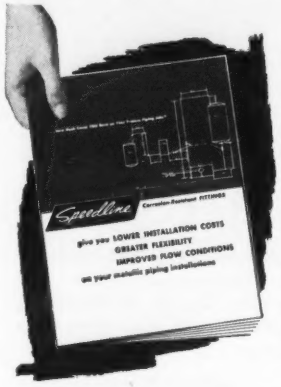
Globe, angle, check valves are all discussed

Complete information on globe, angle, and check valves (all of cast steel) and in 300, 600, 900, and 1500 lb classes, is given in manufacturer's 56-page catalog. Parabolic disc valves for hand or motor control of volume are also described in detail.

In addition to the standard information on construction features, dimensions, weights, etc, the booklet contains complete information on material specifications, preparation of welding ends, flange facings, pressure-temperature ratings, and all other technical data required for selecting valves intelligently.

Cat No. 12-C is issued by Edward Valves, Inc., Dept. CP, 1200 W. 145th St., East Chicago, Ind. When inquiring specify CP 8760 on handy form, pages 2 and 3.

The *Speedline* system saves money on stainless piping and increases flow and capacity



You can save money on your corrosion-resistant lines... even cut your costs in half. *Speedline* engineers achieve these amazing results by using the new light wall stainless pipe and versatile *Speedline* Fittings.

WRITE FOR THIS FREE BOOK

Just write a note on your company letterhead and we will mail you the *Speedline* catalog. It shows why you get better results at less cost with *Speedline* Fittings.

***Speedline* distributors are located in principal cities from coast to coast**

HORACE T. POTTS CO. *Since 1815*
502 E. Erie Avenue, Philadelphia 34, Pa.

When inquiring check CP 8761 on handy form, pgs. 2-3

Jam-packed with cost-cutting, efficiency-boosting characteristics, the Johnson Joint offers exciting possibilities you should know about. It's a packless, self-lubricating and self-adjusting way to get heating or cooling agents in or out of rotating machine parts; used on calenders, dryers, ironers, mills and similar machines. There are hundreds of design and production problems for which it holds the perfect answer.

Write for complete literature

The Johnson Corporation
826 Wood St., Three Rivers, Mich.

When inquiring check CP 8762 on handy form, pgs. 2-3

Pictorial tour of gas meters for 4000 to 10^6 cfh

Sixteen-page bulletin offers sectional views and detailed description of rotary, positive displacement meters to handle any gas, regardless of specific gravity, rate of flow, pulsations or impurities. Approximately 39 types are available to handle gas flows ranging from 4000 to 1,000,000 cfh. Three types are built for 25, 50, and 125 psi respectively. Dimensional drawings for these three types are shown in publication along with tabulated dimensions and displacement rates.

Meter highlights specified in booklet include: 1) no valves, valve gears or other parts to cause leakage or failure; 2) overloads or underloads don't affect accuracy, thus permitting wide ranges above or below normal loads; 3) accuracy doesn't depend upon water level or other uncontrollable factors; 4) low pressure drop; 5) negligible maintenance, confined mainly to lubrication of gears and bearings and occasional check of operating differential. Publication concludes with a pictorial survey of meters which are actually installed and operating in various industries.

Bul M-152 is issued by Roots-Connersville Blower, Div. of Dresser Industries, Inc., Dept. CP, Connersville, Ind. When inquiring specify CP 8763 on handy form, pages 2 and 3.

Nickel plating is feasible for large equipment

According to the reprint of a technical paper, facilities are available for plating large pieces of equipment of several hundred square feet in area and of complex shapes. Recently, several plants have been engineered to plate items of chemical equipment as large as 700 sq ft.

Design factors, welds, sandblasting, plating methods and special engineering requirements are discussed in 4-page bulletin. Bul EB-93/74 is issued by Dept. CP, The International Nickel Co., Dept. EZ, 67 Wall St., New York 5, N. Y. When inquiring specify CP 8764 on handy form, pages 2 and 3.

Packaged burners available in 15 standard sizes

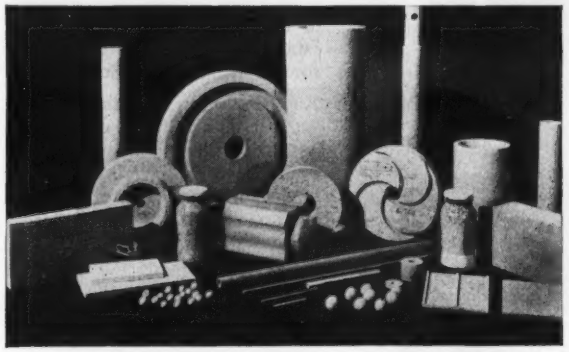
Packaged burners for industrial and process steam applications are available in 15 standard sizes from 50 to 900 hp (1600 to 30,000 lb of steam per hr). Units are designed to operate from gas supplies at 4 commonly available supply pressures and on all grades of fuel oil. Packaged units include all automatic firing equiment, flame failure and safety controls, and may include integrally piped and wired fuel oil pumping and heating equipment.

Bul P-152, which describes advantages, construction, and specifications of burner units, is issued by Coen Co., Dept. CP, 40 Boardman Pl., San Francisco 3, Calif. When inquiring specify CP 8765 on handy form, pages 2 and 3.

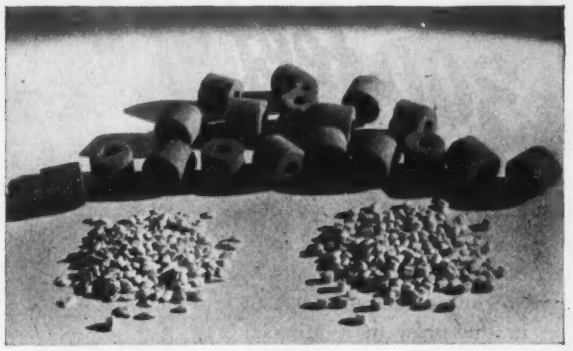
Meet these

"Partners in Progress"

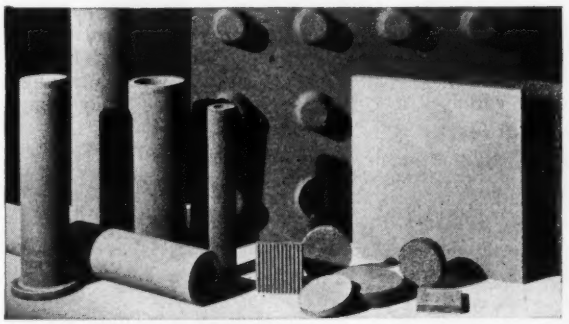
for laboratory, pilot plants, and production



REFRACTORY SHAPES OF NORTON FUSED STABILIZED ZIRCONIA have made possible high temperature operations previously unattainable in the processing of hydrocarbons in the chemical industry. Processing temperatures have been lifted as high as 4700°F. No other refractory has so desirable chemical and electrical, and insulating properties. Write for Bulletin 1409.



CATALYST SUPPORTS are available in a variety of special refractory materials, structures, shapes and sizes. This variety meets the requirements of modern chemical processing. These supports lead to greater yield at lower cost. Write direct for Bulletin CS-2.



POROUS PLATES AND TUBES made of Norton ALUNDUM* fired to at least 2390°F are unaffected by acid and slightly alkaline conditions normally encountered. They combine uniform permeability with great strength. Write for Bulletin 140.

LABORATORY WARE is made of highly refractory Norton ALUNDUM mixtures which contain at least 85% fused alumina (up to 99% in special mixtures). It is not attacked by any organic solvent. Carried in stock by most laboratory supply houses. Write for Bulletin 793.

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries

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NORTON COMPANY, WORCESTER 6, MASSACHUSETTS

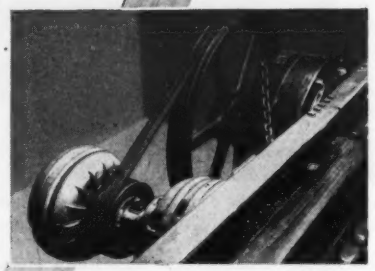
When inquiring check CP 8766 on handy form, pgs. 2-3

How to Shock-proof 300 feet of Conveyor

★ Three-hundred feet of conveyor—and an intermittent loading of from 50 to 250 full bottle cases, made maintenance, downtime, and repair costs soar in the plant of a Milwaukee bottler.

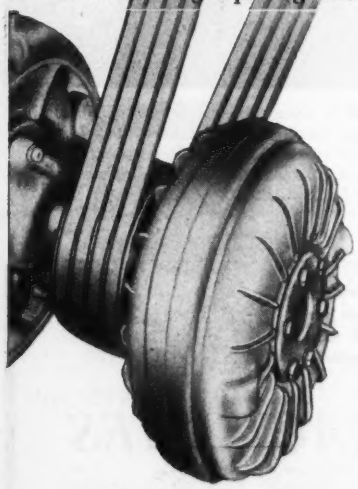
Since two electric motors fought against each other, a Twin Disc HYDRO-SHEAVE Drive was installed at each power station—installed in a few minutes directly onto the motor shaft, in the normal sheave position.

Ever since, each motor and gear reducer takes its share of an unbalanced load without shock—for all shock is absorbed by the HYDRO-SHEAVES. Motors no longer pull against each other. The HYDRO-SHEAVES, by transmitting the power through fluid, permit a *soft, balanced* drive in which motors can pick up a full load cleanly, without jerking or stalling to eliminate entirely many of the reasons for costly operation.



Two electric motors are balanced, shock loads are cushioned out in the plant of a Milwaukee bottler with Twin Disc HYDRO-SHEAVE Drives.

Wherever you have a shock load, an unbalanced load, or an intermittent load, you can save dollars and smooth out the cycle with HYDRO-SHEAVE Drives—manufactured only by Twin Disc. Write today for Bulletin No. 145-B or a complete file of Installation Reports.



TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

BRANCHES: CLEVELAND • DALLAS • DETROIT • LOS ANGELES • NEWARK • NEW ORLEANS • SEATTLE • TULSA

When inquiring check CP 8767 on handy form, pgs. 2-3

NEW LITERATURE

Evaluates weld metals for low temp

An evaluation of the properties of weld metals for low temperature service is featured in the Winter 1953 issue of manufacturer's products review. The 24-page paper devotes one section to discussing materials used in fabrication of pressure vessels for low temperature use.

Another section describes the investigation of ferritic electrodes to determine the properties of deposited weld metals for low temperature applications. Charpy notched-bar properties of weld metals at various temperature levels are given.

This issue also features an article describing the use of gas turbine centrifugal-compressor units and regenerators for gas pipe-line pumping. Use of this equipment on the El Paso Natural Gas Company's pipeline through West Texas, New Mexico, and Arizona is described.

Alco Products Review, Winter 1953 issue, is published by Alco Products Div., American Locomotive Co., Dept. CP, Schenectady 5, N. Y. When inquiring specify CP 8768 on handy form, pages 2 and 3.

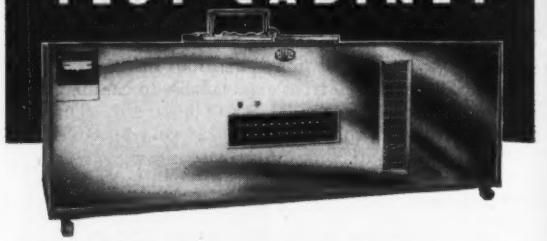
Assists in selection of dust collectors

Twelve-page reprint of technical paper presents informative discussion of operation, application and effectiveness of dust collection equipment. Bulletin includes practical information which will help an engineer select the type of dust collector equipment most suitable for a specific application.

Topics discussed include: classifications of equipment; reasons for installation; selection of equipment; types and applications; efficiency; unit collectors; provisions for dust disposal and salvage; equipment location, servicing and maintenance; and some "don'ts" of selection and applications of collectors.

Bul 270-P2 is issued by Dust Control Div., American Air Filter Co., Inc., Dept. CP, Louisville 8, Ky. When inquiring specify CP 8769 on handy form, pages 2 and 3.

WEBBER LOW-TEMPERATURE
TEST CABINET

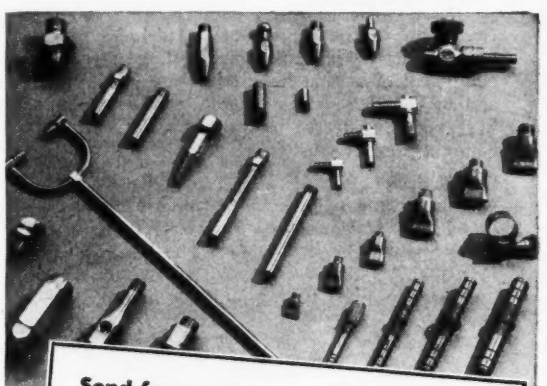


★ The Webber Low Temperature Test Cabinet illustrated is a standard 9 cubic foot unit with terminal panel added for electrical connection to the inner chamber for testing of electrical equipment. The temperature range is from ambient to —125°F., with a very rapid pull-down time. Temperature can be accurately controlled at any point in the temperature range. Temperature is controlled by a visible type indicating controller with a scale range from —200° to +200°F. Recording temperature controller is available as optional equipment. The freezing chamber will withstand impact loading of 1200 pounds per square foot and uniform distribution static loading of 2,000 pounds per square foot. This prevents damage caused by dropping heavy objects in storage compartment. Available as optional equipment are combination air and water cooled compressors and roller-bearing swivel type casters. There's a Webber Unit for every industrial need.

Write for new bulletin giving more complete information.

INDUSTRIAL FREEZER DIVISION
WEBBER APPLIANCE CO., INC.
2740-E MADISON AVENUE • INDIANAPOLIS 3, INDIANA

When inquiring check CP 8770 on handy form, pgs. 2-3



Send for our Bulletin 12 K containing the latest in

High Vacuum Pumps,
Glass Working Machinery,
Burners for Glass Blowing,
Auxiliary Burner Equipment,
Glass Blowers' Supplies,
Pure Gum Rubber Tubing,
Valves, Gauges, etc.
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Glass Blowing Equipment — High Vacuum Pumps and Accessories
MANUFACTURERS RV DISTRIBUTORS
3434 MONTROSE AVENUE CHICAGO 18, ILLINOIS

When inquiring check CP 8771 on handy form, pgs. 2-3

Relay shuts down process — automatically

Designed for use in connection with electric controllers on applications requiring automatic shutdown and manual reset, relay is a necessary adjunct to controller circuit when processing operations require that equipment be automatically shut off and manually reset after a predetermined control point has been reached. By including relay in control systems with electric temperature or pressure controllers, excess temperature or pressure safety cut-off control and high or low-limit cut-off control can be obtained.

Two-page bulletin contains operational and application data, specifications, and installation information on relay unit. Bul 8504 is issued by Station 64, Minneapolis-Honeywell Regulator Co., Brown Instruments Div., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 8772 on handy form, pages 2 and 3.

Properties, applications of needle tubing

Originally designed for surgical uses, needle tubing made from Type 304 stainless steel is characterized by high strength, stiffness, and strict dimensional tolerances. It is also available in certain other tempers which give it greater flexibility and mechanical properties and offer additional fields of application.

Four-page reprint of technical article summarizes uses and gives tips on handling needle tubing. Properties of tubing are also discussed. "Use of Needle Tubing Extended to Mechanical Applications" is issued by Superior Tubing Co., Dept. CP, 1571 Germantown Ave., Norristown, Pa. When inquiring specify CP 8773 on handy form, pages 2 and 3.

Molecular structure is revealed by building-block atoms

Theory of molecular structure and importance of steric relationships are demonstrated in molecular models constructed with scale model atoms. In addition to conveying more general relationships between atoms in organic molecules, models show such factors as space filling properties and steric hindrance, as well as transition from one stereoisomer to another.

Theory, construction, uses — and limitations — of set of organic atom models and metal-coordination set are described in 12-page bulletin. Various types of molecules constructed with atoms from sets are illustrated. Characteristics of organic and metal-coordination atoms are included. "Atom Model Sets" is issued by Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. When inquiring specify CP 8774 on handy form, pages 2 and 3.

THERE'S A U. S. INDUSTRIAL GLOVE TO MEET ALL YOUR INDUSTRIAL NEEDS

#102—Lightweight
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U. S. NEOPRENE DIPPED INDUSTRIAL GLOVES

- Give maximum safety, comfort and economy.
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- Longer lasting.
- Flexibility plus roughened surface for positive grip. (Also available with smooth surface on special order.)
- Available in a full line of sizes, lengths and weights.

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U. S. NEOPRENE CANVAS-LINED UTILITY GLOVES AND GAUNTLETS

- For all-round hand protection.
- Neoprene-dipped, full-cut, eight-ounce canton flannel inserts.
- Curved fingers to fit hand's natural shape.
- Easy flexibility. • Long wearing.
- Protect against cuts, splinters and abrasions.

Knit Wrist Style *One size only.*

Gauntlet Style *Heavyweight only.*

"U. S." will be glad to analyze your glove needs and help select the right glove for the right job. Call your nearest United States Rubber Company Branch or write United States Rubber Company, P. O. Box 1453, Providence, R. I.

U. S. INDUSTRIAL GLOVES

Products of UNITED STATES RUBBER COMPANY

When inquiring check CP 8775 on handy form, pgs. 2-3

One of many reasons why skilled chemical workmen prefer

AIRETOOL TUBE EXPANSION CONTROL SYSTEM

rolls tube joints tight automatically

Now science replaces "sensitive feel" in tube rolling! The AIRETOOL Tube Expansion Control System eliminates danger of over or under expansion. It automatically regulates the amount of expansion, produces maximum tightness and holding strength in every tube joint! With this system you can actually cut tube rolling time in half! Easy to use. Set dial for tube size, insert ball bearing expander and start powerful motor. When the tube joint reaches proper expansion and tightness, the control automatically shuts off the power. For more information and a convincing demonstration, write to:

There's an Airetool Tube Cleaner and Tube Expander for Every Type of Tubular Construction.

AIRETOOL
MANUFACTURING COMPANY
SPRINGFIELD, OHIO

BRANCH OFFICES: Philadelphia • New York • Chicago Tulsa • Baton Rouge • Houston • Hudson Heights (N.J.)
REPRESENTATIVES in principal cities in U.S.A., Canada, Mexico, South America, England

When inquiring check CP 8776 on handy form, pgs. 2-3

NEW LITERATURE

Improves condition of plastic molds

Employed both during initial manufacturing and reconditioning of plastic molds, wet blasting brings about savings of time and labor, and reduces manual polishing requirements. Wet blasting during manufacture blends all grinding lines, tool marks, and surface imperfections, and removes heat treat scale. During reconditioning, it is done to remove corbonaceous deposits which form and plastic resins which adhere to the mold surface.

Bul 63, which outlines features and theory of process, is issued by American Wheelabrator & Equipment Corp., Dept. CP, 1036 S. Byrkit St., Mishawaka, Ind. When inquiring specify CP 8777 on handy form, pages 2 and 3.

Tells manufacturing steps in alloy metal wire

All steps in the manufacture of quality alloy metal wire are clearly shown in manufacturer's folder. Photo series depicts uses of the wires of various composition. Among uses listed are in welding rods, wire for automatic welding equipment, electronics equipment, woven wire cloth, spring and various consumer applications.

Copies of the folder are available from the Alloy Metal Wire Co., Dept CP, Prospect Park, Pa. . . . or for more information check CP 8778 on handy form, 2 and 3.

Molded nylon parts have many uses

Molded nylon parts find extensive applications as mechanical parts such as gears, bearings, cams, housings and many others. Strength, light weight, self-lubrication and other advantages of nylon for use in molded parts are outlined in 4-page illustrated bulletin.

Bul CDP-654 is issued by Chemical Div., General Electric Co., Dept. CP, Pittsfield, Mass. When inquiring specify CP 8779 on handy Reader Service slip, pages 2 and 3.

We Build Only PUMPS — The Finest of their Kind

APCO TURBINE-TYPE PUMPS

For the answer to any pumping problem — large or small—lasting dependability and consistent economy — may we suggest that you get acquainted with PUMPS by Aurora. They have pleased thousands. You, too, will like them.

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Subsidiary Of The New York Air Brake Company
62 LOUCKS STREET, AURORA, ILLINOIS

When inquiring check CP 8780 on handy form, pgs. 2-3

NoDrip ...STOPS CONDENSATION DRIP!

NoDRIP PREVENTS RUST
in addition to stopping drip and keeping floors dry.
ANYONE CAN APPLY
Brush, trowel or spray NoDrip on tanks, condensers, suction lines, vats, pipes, walls, ceilings, etc. NoDrip adheres to metal, concrete, brick, plaster. It forms a seamless covering that is effective as soon as dry. Acid, alkali and brine resistant.

Interesting 32-page Handbook shows what NoDrip is and what it does. It's free. Send coupon today.

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J. W. MORTELL CO., 530 BURCH ST., KANKAKEE, ILLINOIS
TECHNICAL COATINGS SINCE 1895

When inquiring check CP 8781 on handy form, pgs. 2-3

Solenoid valve features minimum pressure drop

Useful in the movement and control of all types of fluids, including aromatics and acids, solenoid valve features floating shear seal, simplicity of design and minimum pressure drop. As a result of a path of flow which is directly in line with the tubing or connection to either side of valve, pressure drop caused by valve is minimized.

Valve consists of three basic parts — a plunger, the disc, and the valve seats, which are positioned in a housing. These parts are completely removable and easily replaced. The disc is the actual sealing part, and has been fired above 3000°F. It is impervious to most acids and alkalis.

Specifications, features and applications of unit are outlined in 12-page bulletin. "The Valcor Solenoid Valve" is issued by Valcor Engineering Corp., Dept. CP, Carnegie Ave., Kenilworth, N. J. When inquiring specify CP 8782 on handy form, pages 2 and 3.

Meters sludge digester gas with low head loss

Manufacturer reports that flow meter gives measurement of sludge digester gas with permanent head loss as low as one half inch of water. Since purpose of sludge gas measurement is to evaluate digester efficiency, or, in case of heat or power production, to totalize amount of gas supplied by the digester, it is important to obtain an accurate, continuous measurement which sacrifices the least possible pressure.

Two-page data sheet summarizes details of construction and operation of flow water. Photos and drawings show features of unit. Data Sheet 833-11 is issued by The Foxboro Co., Dept. CP, Foxboro, Mass. When inquiring specify CP 8783 on handy form, pages 2 and 3.

Discusses characteristics of control centers

Informative 31-page application bulletin discusses characteristics of control centers that make for flexibility of application, ease of servicing, and safety of operating personnel. In addition, booklet stresses case for centralizing all controls for an entire system in one group of enclosures.

In addition to describing three types of control centers and the various electrical components that make up typical units, bulletin outlines a three-step building-block system of planning control centers.

Bul B-5621 is issued by Westinghouse Electric Corp., Dept. CP, Box 2099, Pittsburgh 30, Pa. When inquiring specify CP 8784 on handy form, pages 2 and 3.

Conveying nitric acid for use in batch nitrations is quick death for ordinary flexible metal hose. Sulphuric acid and plating solutions are other notorious killers. When temperature and pressure extremes and adverse handling conditions are also involved, hose replacement is frequent and expensive.

That's why—for tough jobs—it's good economy to specify Atlantic flexible metal process hose. Manufactured to survive the most destructive use, it is unequalled for leak-proof qualities, flexibility, durability, strength and lightness. It performs long after ordinary hose is scrapped and returns real savings in your material and labor dollar.

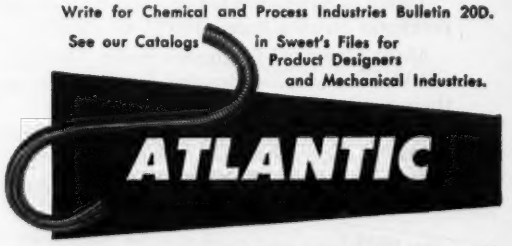
Whatever your application — conveying, controlling movement and vibration, correcting misalignments, compensating for expansion and contraction — *there is an Atlantic flexible metal hose that is best for it.*

Available in Seamless or Interlocking construction: Steel, stainless steel, monel, bronze. ⅛"—36" I.D. inclusive with appropriate fittings.

Our engineers have developed flexible metal hose for a number of classified nuclear applications. Though these types cannot be released at present, the experience gained is available for any unusual problems you may have.

Write for Chemical and Process Industries Bulletin 20D.

See our Catalogs in Sweet's Files for Product Designers and Mechanical Industries.



ATLANTIC METAL HOSE CO., INC.
106 West 64th St., New York 23, N. Y.

When inquiring check CP 8785 on handy form, pgs. 2-3

NEW 1953

TEFLON* PACKINGS

BRAIDED TYPE

Chemical plants large and small have long been looking for a permanent acid packing for those "hard-to-get-at" valves.

These valve stems must be packed and made tight at all times. A drip from a leaky valve is dangerous to personnel. These acid valves require 1/8", 3/16", 1/4", 5/16" or 3/8" square packing. Up to now braided blue asbestos packing has been considered best and cheapest (60-day life). Today the whole world of packing has been changed by the miracle material "Teflon". Braided Teflon yarn packing is fast replacing all forms of braided packing for acid service because it lasts as long as the valve itself. Practically no acid, diluted or concentrated, hot or cold, has any affect on the packing. (Many records of two-years' service or more have been reported). This is the big news for 1953 for Chemical Engineers and Chemical Plant Operators.

"JOHN CRANE" Style 704 is available in handy coil or spool form in a full range of sizes. A stock of "JOHN CRANE" Braided Teflon Packing in your storeroom may be a life saver for you.

Teflon is recommended on chemicals at any pressure with temperatures ranging from -100°F. to +500°F.

Many Chemical Engineers prefer "JOHN CRANE" Style 704 Braided Teflon Packings for their service. For the best in mechanical packings fabricated from braided Teflon, contact Crane Packing Company. *Send for this Teflon Technical Bulletin.* Write 1821 Cuyler Avenue, Chicago 13, Illinois.

**Du Pont's trademark for tetrafluoroethylene resin.*

JOHN CRANE CRANE PACKING COMPANY

When inquiring check CP 8786 on handy form, pgs. 2-3

NEW LITERATURE

Tells what's new for lab apparatus, instruments

A 16-page, two-color booklet has been released featuring new laboratory equipment offered by various manufacturers.

Among the many items featured are two types of low-priced ovens, a 6-unit extraction rack, a floating thermometer, automatic pipet and vial filling machine, several balances, electrophoreses-convection apparatus, a new simplified technique for extraction and determination of salts of organic bases and acids, a combination serological-utility water bath, and various other items.

"What's New for the Laboratory?, No. 17" is issued by the Scientific Glass Apparatus Co., Inc., Dept. CP, 100 Lakewood Terrace, Bloomfield, N. J.

Gives specifications of regulating valves

Internal pilot regulating valves for on-off control have single-seated, straight-through construction with a special cushioning chamber for water service to overcome hammering in the valve. Units are available in slip stem and rotary shaft types.

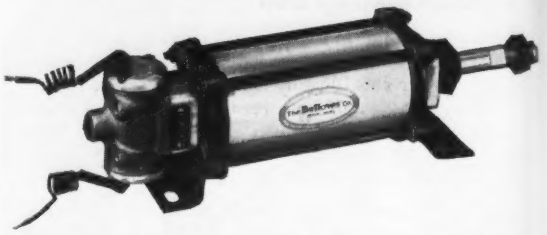
Specifications of valves are included in four-page data sheet. Specification Sheet 404-1 is issued by Station 64, Minneapolis-Honeywell Regulator Co., Brown Instruments Div., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 8787 on handy form, pages 2 and 3.

Gives specs on 2 cleaning units

Cleaning, sterilizing, industrial housekeeping, and parts cleaning are among the uses of the steam-detergent cleaning machine described in four-page bulletin. Use of this electrically-powered unit is indicated where the flames, smoke and fumes of fuel-fired equipment and flooding of the working area cannot be tolerated.

Second machine described can be applied where the objects to be cleaned can be brought to

AIR CYLINDER WITH CHOICE OF BUILT-IN VALVES



The Bellows Air Motor—the only air cylinder with *built-in* valve and operating controls — now offers a choice of six separate valving arrangements. Now the engineer can choose the method of valving he prefers and still have all the advantages that integral construction means: jet-quick action, compactness, sure-fire control, simple installation.

Learn more about this newest development in the Bellows Air Motor. Write for your copy of Bulletin CL-50, just off the press. Address Dept. CP-353,

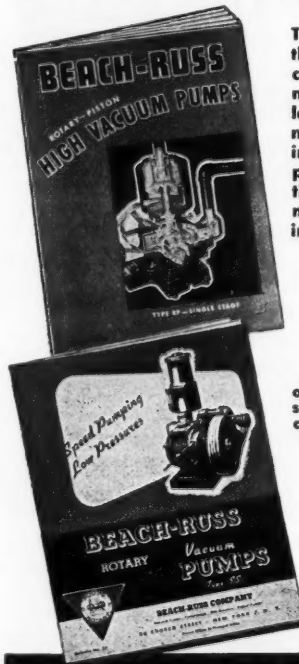
The Bellows Co.

ESTABLISHED 1911

AKRON 9, OHIO 701A

When inquiring check CP 8788 on handy form, pgs. 2-3

Data on Vacuum Operations



These two catalogs cover the range in vacuum applications from 10 mm. to 10 microns or better, for distillation, extraction, impregnation, metallizing, deairing, electronic evacuation, pick-up and place or position and hold and all the many other uses of vacuum in the lab or in the plant.

BEACH-RUSS ROTARY VACUUM PUMPS

offer you faster pump down, superior mechanical efficiency and much longer service life.

Write for these two catalogs and ask us to put your name on the mailing list for "Much Ado About Nothing". . . our regularly issued house organ that will help you keep posted on the newest ideas in the use of vacuum in industry.

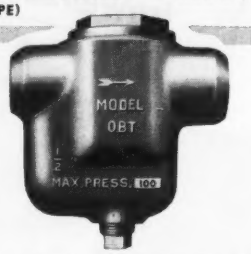
BEACH-RUSS COMPANY
46 CHURCH STREET · NEW YORK 7, N. Y.

When inquiring check CP 8789 on handy form, pgs. 2-3

and Now! the New COE

O. B. T. STEAM TRAP

(THERMOSTATIC TYPE)



Developed Especially For Draining Gravity Convectors . . .

Check These Desirable Features —

High operating efficiency, compact design and low price make this new steam trap ideally adaptable to countless applications in draining steam coils and radiators used for space heating in buildings, schools, institutions, greenhouses and most types of dry kilns.

It delivers condensate at temperatures between 190° and 205° F. when return line pressure is zero.

NOTE: Not intended for use on fan types unit heaters or process equipment.

1. Eliminates flash steam. (With atmospheric return.)
2. Long service life.
3. Non-cycling operation.
4. Operation is easily ascertained without trap removal from line.
5. Small — compact — easily installed.
6. Made in ½" size only. Available for two pressure ranges— 0-50 p.s.i. and 0-100 p.s.i.

For Complete Information write to:

The COE MANUFACTURING CO.

503 BANK ST. • PAINESVILLE, OHIO

When inquiring check CP 8790 on handy form, pgs. 2-3

What's A "New Solution"?

It's an article in CHEMICAL PROCESSING describing a new way of solving a tough plant operating problem. In each issue you will find specific "case histories" showing how these processing problems were solved.

Each article states the operating problem . . . explains the process used and gives details of how problem was solved . . . shows results secured.

Take a look at "New Solutions" articles in this issue — they might suggest a "solution" for some of your tough processing problems.

a wash deck or booth which has suitable drainage facilities.

It is also electrically powered and can apply a hot soap and water mixture at nozzle pressures up to 400 psi.

Bul 70 is issued by Livingstone Engineering Co., Dept. CP, 100 Grove St., Worcester, Mass. When inquiring specify CP 8791 on handy form, pages 2 and 3.

Nylon molding powder has variety of uses

In view of existence of over 800 applications for nylon moldings, nylon molding powders find wide use in industrial operations. Material has properties and advantages which are desirable in operations of injection molding, extrusion, and wire-coating.

Illustrated 52-page bulletin discusses manufacture, compositions, uses, and properties of nylon molding powders. In addition to giving comprehensive information on injection molding, extrusion, and wire-coating operations, bulletin describes molding equipment, reuse of scrap, preparation of experimental parts, and machining of nylon.

Bul A-4527 is issued by Polychemicals Dept., E. I. du Pont de Nemours & Co., Inc., Dept. CP, Wilmington 98, Del. When inquiring specify CP 8792 on handy Reader Service slip, pages 2 and 3.

"Pharmaceutical Chemicals" — improved 2nd edition

Second edition of makers catalog — "Pharmaceutical Chemicals" — contains added data and information, and has been restyled to improve readability. Product information includes chemical name, structural formula, physical properties, solubilities, pertinent data of interest to pharmaceutical formulators.

Issued by the Dow Chemical Company, Midland, Mich. When inquiring about this catalog simply specify 8793 on handy form, pages 2 and 3.

Now available

a new improved plastic diaphragm . . .

"L-2" diaphragms offer new high standards of performance in many severe services

For a wide variety of severe services, including the valving of 66° Bé sulfuric acid, the new, improved "L-2" diaphragm offers physical and service characteristics never before available. Like its predecessor, the "L-1", the "L-2" diaphragm is made of polyethylene specially compounded to provide high resistance to strong acids and other highly active materials.

Hills-McCanna diaphragm valves with "L-2" diaphragms are available with a choice of manual, remote or automatic operators and with bodies of any machinable alloy or with rubber, Neoprene, glass or lead linings. Sizes range from ⅜" through 14". "L-2" diaphragms permit operation at temperatures to 125°F and pressures to 100 psi. Other diaphragms available are Kel-F, Neoprene, rubber, Hycar, Tygon, and butyl. Depending on material, these may be used at pressures to 150 psi, temperatures to 220°F.

Write for complete details. HILLS-McCANNA CO., 2370 W. Nelson St., Chicago 18, Ill.

HILLS-McCANNA

saunders patent diaphragm valves

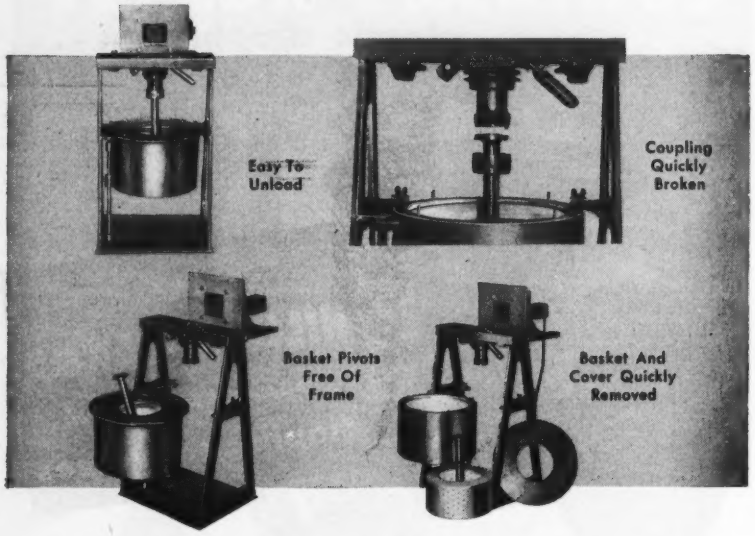
Also Manufacturers of Proportioning Pumps

Force Feed Lubricators • Magnesium Alloy Castings

When inquiring check CP 8794 on handy form, pgs. 2-3

GET THIS PROOF!

Rent An AT&M Centrifugal . . . See For Yourself How Centrifuging Can Benefit You



Are you missing the advantages of centrifuging? Do you know that in many instances AT&M equipment does away with settling tanks, filter presses, squeeze rolls, vacuum presses? That it is saving time, space and costs in processes involving chemical preparations—explosives—nitrating—acid wringing—ammonium sulphate—food products — soap — drugs, medicines, cosmetics—oils and greases—paints, varnishes—ceramics, brick, clay—fertilizers—nitrates—sludges—textiles —plastic bases?

Here's an easy, inexpensive way to prove to yourself exactly what centrifuging can do for you. Rent an AT&M laboratory model centrifugal. Then you can test your own materials and check the results. Ideal for laboratory or pilot plant operation, these machines develop centrifugal force comparable to full size equipment, providing you with accurate data for full scale production.

AT&M centrifugals are packed with AT&M-engineered design developments—for example: variable speed drive; perforate or imperforate baskets, rubber covered or in any machinable metal; fume-tight hoods for processing volatile liquids.

RENTALS COST LITTLE

You can rent a laboratory centrifugal from AT&M at a very nominal rate. If you later decide to buy, part of the rental fee will be credited against the purchase price. Write for particulars.

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1412 Hyde Park Avenue, Boston 36, Mass.

Please send me my free copy of the new AT&M booklet "Centrifugal Force." I am interested in the following processes:

Separation ☐ Extraction ☐ Dehydration ☐ Clarification ☐ Coating ☐ Filtration ☐ Draining ☐ Thickening ☐ Impregnation ☐ Sedimentation ☐

ANY OTHER PROCESS:.....

Name.....Title.....

Company.....

Street.....

City.....Zone.....State.....

SAVE TIME, SPACE AND COSTS WITH **A.T. and M. CENTRIFUGING**

When inquiring check CP 8795 on handy form, pgs. 2-3

NEW LITERATURE

Gives useful info on acetone

Informative 4-page bulletin discusses specifications, physical properties, uses, chemical reactions, and toxicity of acetone.

Applications listed include uses in textiles, protective coatings, shoes and leather, pharmaceuticals and drugs, cleaners and removers, explosives, and synthesis.

Technical Data Sheet No. 13 is issued by Commercial Solvents Corp., Dept. CP, 260 Madison Ave., New York 16, N. Y. When inquiring specify CP 8796 on handy form between pages 2 and 3.

Close-coupled pumps are easily installed

Offering a choice of packing or mechanical seal, supporting-adapter type, close-coupled general purpose pumps are easy to install. They require only four bolts plus electrical and pipe connections; no special foundation is required.

Construction features, sealing arrangements and dimensional data are given in 6-page bulletin. Exploded view of unit shows details of construction.

Bul 52B6083A is issued by Allis-Chalmers Manufacturing Co., Dept. CP, 1151 S. 70th St., Milwaukee, Wis. When inquiring specify CP 8797 on handy form, pages 2 and 3.

Describes features of throttle valves

Features of design and construction of throttle valves are outlined in 4-page bulletin. Nonrotating stem design, stuffing box, thrust bearing, double-seated type valve construction, safety attachment, operating control, and type of end construction are described in detail.

Sectional view of valve shows various parts and features. Bul BV-6 is issued by Brown Valve Div., Vernon Tool Co., Ltd., Dept. CP, 1101 Meridian Ave., Alhambra, Calif. When inquiring specify CP 8798 on handy Reader Service slip between pages 2 and 3.

Ceilcrete

a stonelike corrosion proof trowelled on surface

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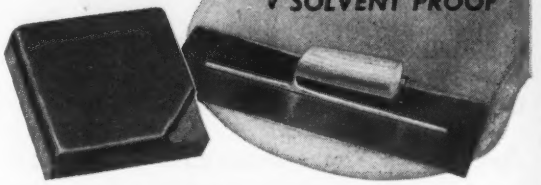

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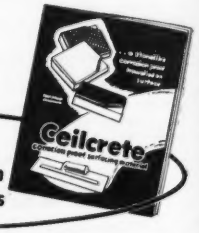
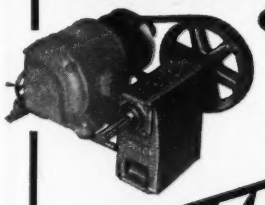
4832 Ridge Road, Cleveland 9, Ohio



Send for technical data on its application, corrosion resistance properties

When inquiring check CP 8799 on handy form, pgs. 2-3

LOW-COST



FINGERTIP SPEED CONTROL with LOVEJOY variable SPEED PULLEYS

Speed up or slow down equipment while machines are running — make material or production changes without losing time and labor. Easily installed on old or new machines. Sizes fractional to 8 H.P. Ratios to 3:1 infinitely variable. Also investigate the new Lovejoy Tilting Motor Base. Adjustable width and length to accommodate all fractional motors up to ¾ H.P. Low price.

Send for catalog and complete data.

LOVEJOY FLEXIBLE COUPLING CO.
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Also Mfrs. Lovejoy Universal Joints and Lovejoy Flexible Couplings

When inquiring check CP 8800 on handy form, pgs. 2-3

What's A "New Solution"?

●

It's an article in CHEMICAL PROCESSING describing a new way of solving a tough plant operating problem.

In each issue you will find specific "case histories" showing how these processing problems were solved.

Each article states the operating problem . . . explains the process used and gives details of how problem was solved . . . shows results secured.

Take a look at "New Solutions" articles in this issue — they might suggest a "solution" for some of your tough processing problems.

Effective utilization of engineers is outlined in factual report

Based on a nationwide survey, informative study of engineering manpower utilization points out that industry could use engineers more effectively by analyzing assignments and by standardizing and simplifying many routine engineering jobs so that they could be done by supporting personnel. According to the report, some of the duties now being performed by supporting personnel include: drafting, designing, cost accounting, keeping records, market research, operation of experimental equipment and pilot plants, filing, requisitioning, and handling details with shops.

In addition to pointing out sources for supporting personnel and auxiliary engineering talent, report offers two checklists. One of these is designed to analyze assignments of engineers within the companies to determine if their work assignments use their talents to the best interests of the individual and of the company. The second checklist attempts to pinpoint engineering staffs' suggestions for supporting personnel assignments and other steps which will enable them to concentrate on developing ideas and creative engineering work.

In a separate section, report makes an analysis of indoctrination programs, considers the importance of careful selection and training, outlines work indoctrination programs, and includes the orientation checklist. Chapter dealing with the problem of engineering turnover considers factors of military demands and defense program requirements in addition to discussing company-sponsored benefits as well as incentives which are important to engineers.

To obtain "How to Improve the Utilization of Engineering Manpower" remit $2.00 direct to National Society of Professional Engineers, Dept. CP, 1121 15th St., N.W., Washington, D. C. When inquiring specify CP 8801 on handy form, pages 2 and 3.

Gives consistant air-gas ratio with one-valve control

Simultaneous controlling and accurate proportioning of air and gas for firing of industrial furnaces, ovens, kilns, and dryers is possible with a single control valve for manual or automatic operation. Proper mixture of air and gas is easily secured with gas of any Btu content. Indicator dial permits easily duplicated settings for any desired heating rates. Self-locking air-gas mixture control adjustment with vernier drive is less affected by dirt in gas.

Features, applications, operation, construction and typical manifold layouts are described in informative catalog. Numerous tables — mixer capacities for 5 different kinds of gases and for 8 air pressure ratings — and drawings supplement text.

Cat 805A is issued by Hauck Manufacturing Co., Dept. CP, 124-136 Tenth St., Brooklyn 15, N. Y. When inquiring specify CP 8802 on handy form, pages 2 and 3.

PEABODY CYLINDRICAL FURNACES

. . . CUSTOM ENGINEERED DESIGNED AND BUILT TO MEET JOB REQUIREMENTS

. . . high-temperatures readily available with high-efficiency operation, low-maintenance and simplified installation and controls . . .

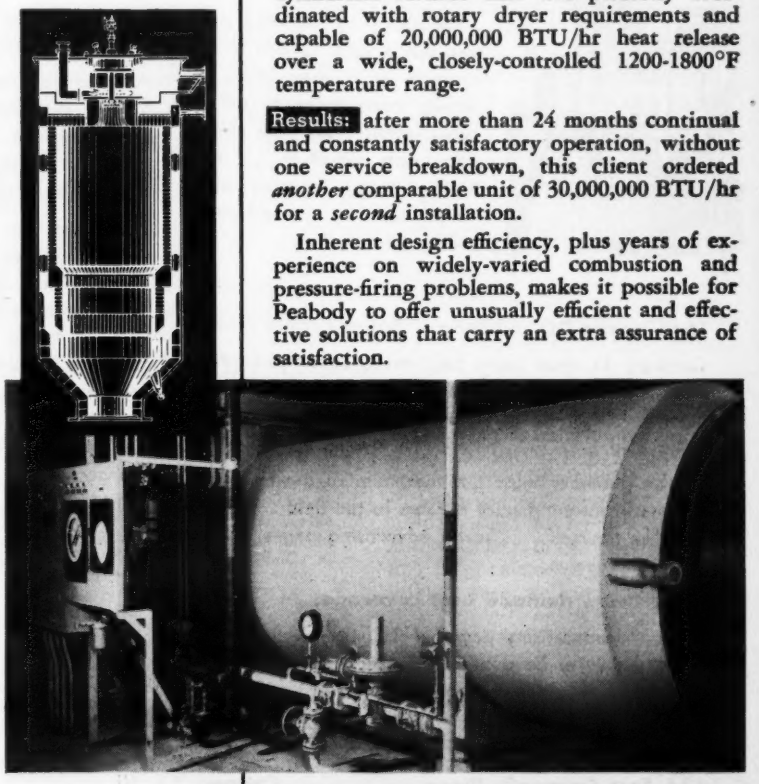
Peabody Cylindrical Furnaces are successfully solving many critical processing problems throughout industry with major benefits of reduced costs and increased product quality.

Typical Problem: to thoroughly dry, with hot combustion gases, various bulk chemicals in a rotary dryer so effectively that customer acceptance and purity of end product would be assured.

Solution: Peabody engineers designed and built a cylindrical, direct-fired, gas/oil-fired cylindrical furnace that was perfectly coordinated with rotary dryer requirements and capable of 20,000,000 BTU/hr heat release over a wide, closely-controlled 1200-1800°F temperature range.

Results: after more than 24 months continual and constantly satisfactory operation, without one service breakdown, this client ordered *another* comparable unit of 30,000,000 BTU/hr for a *second* installation.

Inherent design efficiency, plus years of experience on widely-varied combustion and pressure-firing problems, makes it possible for Peabody to offer unusually efficient and effective solutions that carry an extra assurance of satisfaction.



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ENGINEERING CORPORATION
580 FIFTH AVENUE • NEW YORK 36, N. Y.
Manufacturers of all types of combustion equipment, direct-fired air heaters, gas scrubbers, coolers, and absorbers

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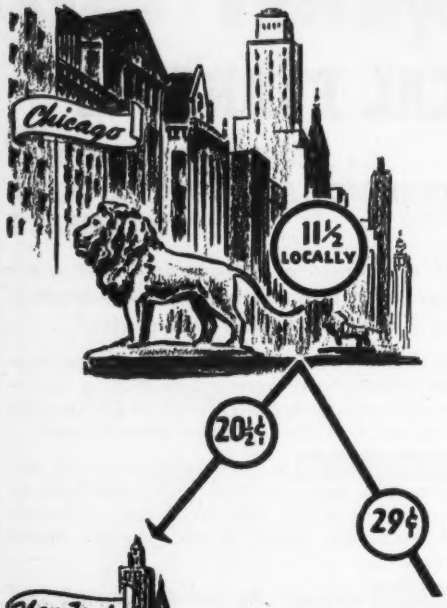
PEABODY LIMITED • LONDON, S.W.1, ENGLAND

255

When inquiring check CP 8803 on handy form, pgs. 2-3



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29c . . . if you live in San Francisco. 20½c if your home is in New York; 26c to Portland; 23c to Miami; 11½c if you live here in Chicago. That means $1.38 to $3.48 per year . . . for postage alone. Yet this magazine comes to you without charge.

Why do we do it?

Why don't we demand that you buy a subscription? Well, strange as it may seem, it usually costs more to sell a subscription than the publisher gets out of it . . . and a good many important men simply can't be reached when selling subscriptions.

Then where DO publishers' dollars come from?

Contrary to what many folks think, subscription revenue is hardly a "drop in the bucket" of a publisher's income. Most all of it must come from the advertising sold.

So the publisher must get maximum readership from the maximum number of readers in the field . . . from men like yourself . . . so his advertising pages will be of greatest value.

Advertisers demand best coverage.

Since the advertisers pay the bills, the publisher can succeed only as he publishes the most readable magazine and then gets the best possible coverage of the best readers in the field.

And, as you can see, the most effective method of getting such coverage is (a) to hand-pick the most important men, (b) send the magazine to ALL of these men, and (c) make it so valuable, so interesting that they will want to read it.

That's why you get CHEMICAL PROCESSING . . . without charge. You are important in chemical processing, hence you are important to our advertisers, hence you are important to us as publishers. That's why we spend many thousands of dollars on every issue of CHEMICAL PROCESSING, to make it of top interest to you in your work — to make every issue more than worth your reading time. That's why CHEMICAL PROCESSING comes to you without charge.

CHEMICAL PROCESSING

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Published by PUTMAN PUBLISHING COMPANY

Creators of PUTMAN-STYLE Magazines . . . terse, vital editorial; "hand-picked" circulation; square, high-visibility format; quality readership; hence more READER ACTION

MEMBER OF NATIONAL BUSINESS PUBLICATIONS, INC. & CONTROLLED CIRCULATION AUDIT, INC.

NEW LITERATURE

Determines heat of combustion of solid and liquid fuels

Peroxide bomb calorimeter is recommended for routine fuel tests in power plants, inspection laboratories, and other places where such tests are both intermittent and not extremely critical. Unit is useful for determining heat of combustion of coal, coke, petroleum products and other combustible materials, using sodium peroxide as the oxidizing medium.

Four-page bulletin presents discussion of the purpose, applications, principle of operation, limitations, general description, operating procedure, and standardization of the unit. Specification 1400 is issued by Parr Instrument Co., Dept. CP, 211 Fifty-third St., Moline, Ill. When inquiring specify CP 8804 on handy form, pages 2 and 3.

Series of centrifugal pumps covered in bulletin

Series of single stage, double suction centrifugal pumps, designated as the Fig 3405 pumps, with several advances over previous designs, is covered in bulletin.

Standard features include renewable stuffing box bushings, sealed bearing housings, cowl-type glands suitable for use with quenching liquids, and stainless steel impeller keys. Teflon water seal rings, die-formed stuffing box packing, and corrosion-resistant gland bolts are also standard.

Pumps are also highly compact. Bearing spans have been kept to the shortest possible distance, according to manufacturer. This results in overall savings in length of as much as 50% in some models.

Pump casings are horizontolly split. Removal of upper half permits inspection, maintenance, and removal of the entire rotating element. To do this it is not necessary to disturb the suction and discharge piping, or pump and driver alignment.

Bul 721.6 is issued by Goulds Pumps, Inc., Dept. CP, Seneca Falls, N. Y. When inquiring specify CP 8805 on handy form, pages 2 and 3.

Offer temperature control manual on heating

Newly-revised 24-page two-color manual, "Design and Process Engineers Guide to Industrial Temperature Measurement and Control," defines different types of control systems and distinguishes between them so that the engineer can quickly select type most suited to particular application. Discussed in the manual are: eight ways of responding to temperature, five ways of putting that response to work, and the nine basic types of manufacturer's instruments. It then takes up evaluation of systems and the important considerations in application engineering.

Clarification is brought to the subjects of 1) influence of the firing system upon design of the

control system; 2) fundamental principles of mercury-bulb installation; and 3) basic concepts of electrical and mechanical control theory.

Typical control circuits and piping system arrangements, as well as the ranges and calibrations of scales and dials are presented diagramatically. Bulletin is liberally illustrated and highly organized for easy reference.

Bul No. 101 may be obtained from The Partlow Corp., Dept. CP, New Hartford, N. Y. When inquiring specify CP 8806 on pages 2 and 3.

Samples, messages speed through pneumatic tube

Heavily illustrated 50-page booklet tells how pneumatic tube systems speed transmission of letters, orders, samples, and other objects from one part of a plant to another. Application in several companies (including a paint firm and a pharmaceutical plant) is completely covered with photos and text. The publication's technical data section provides essential specifications of component parts of systems.

"On Target" is issued by Lamson Corporation, Dept. CP, Syracuse 1, N. Y. When inquiring specify CP 8807 on form, pages 2 and 3.

Give details on pinch-type valves — selection, operation

Manufacturer's 24-page, illustrated booklet thoroughly describes simplicity of operation of complete line of pinch-type, non-plugging flexible valves.

Included in the booklet are advantages and uses of this type of valve. Construction features of the valve — having but two principal parts — are explained. Charts, diagrams, and recommendations regarding proper selection, mounting, and installation are included, as well as maintenance instructions.

Cat FL 382 is issued by Farris Flexible Valve Corp., Dept. CP, 505 Commercial Ave., Palisades Park, N. J. When inquiring specify CP 8808 on handy form, pages 2 and 3.

Fork truck handles materials without using pallets

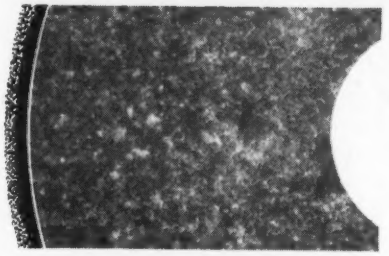
Fork truck equipped with special steel plate and a pusher attachment provides system for handling materials in unit loads without use of pallets. Loading is accomplished by having fork truck push steel plate under load, thereby eliminating all manual handling.

Illustrated folder shows principle of operation and features of system. Bul P-1173-A is issued by Yale & Towne Manufacturing Co., Dept. CP, 11000 Roosevelt Rd., Philadelphia 15, Pa. When inquiring specify CP 8809 on handy form, pages 2 and 3.

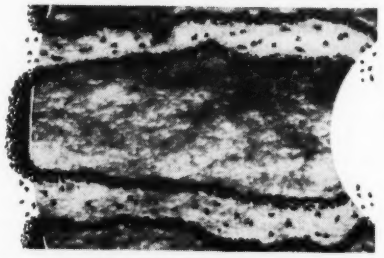
GRADUATED DENSITY

makes MICRO-KLEAN the most effective filter on the market!

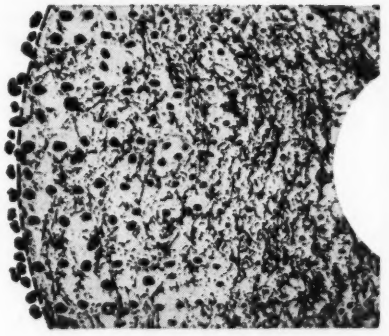
How MICRO-KLEAN compares with other cartridge filters



Compare MICRO-KLEAN with FILTERS WITH THE SAME DENSITY THROUGHOUT. The filter media density is the same on the pressure and discharge surfaces of the element; therefore, dirt accumulation is largely on the outside surface, choking the cartridge ("plastering") and reducing the effective filter life.



Compare MICRO-KLEAN with FILTERS WITH HAPHAZARD DISTRIBUTION OF FILTER MEDIA. Uneven haphazard media density permits fluid to find channels through the filter, and pass solids larger than the minimum filter spacing.



Now Look at the advantages offered by MICRO-KLEAN. See how the fibre density increases toward the discharge side of the MICRO-KLEAN filter cartridge? In effect, every Cuno MICRO-KLEAN cartridge is an infinite multiplicity of screens, ranging from relatively coarse on the outside down to 10 microns in the center. Because of MICRO-KLEAN'S graduated density in depth, particles are entrapped within the entire depth of the filter element, giving the cartridge a much longer effective life. Standard cartridge size is 9¾" long by 2¾" O. D., in densities of 10, 25 and 50 microns.

MICRO-KLEAN gives you

- greater dirt holding capacity
- absolute protection against rupturing or channeling of the cartridge
- longer effective cartridge life

REMEMBER . . . IF YOU CAN PUMP IT, CUNO CAN FILTER IT

M.3.C

CUNO **ENGINEERED FILTRATION**
Removes More Sizes of Solids From More Kinds of Fluids

AUTO-KLEAN (disc-type) • MICRO-KLEAN (fibre cartridge) • FLO-KLEAN (wire-wound)

MICRO-KLEAN FILTERS BOOST PRODUCTION IN CHEMICAL PLANTS

Fewer Cartridge Changes Necessary with MICRO-KLEAN

When you have to shut your fluid flow system down in order to clean a filter or replace a cartridge, you lose valuable production time. If you are troubled with this problem, it would pay you to investigate Cuno's MICRO-KLEAN filters.

MICRO-KLEAN's graduated density-in-depth allows greater capacity for dirt accumulation within the micronic cartridge, giving you twice the effective life of an ordinary filter cartridge. Thus cartridge replacement costs are cut in half.

And the high porosity of MICRO-KLEAN permits high flow rates, enabling you to speed up fluid processing. MICRO-KLEAN's compact, specially engineered construction affords simplicity of installation and maintenance. Changing cartridges can be accomplished in a few seconds—only one nut has to be removed.

Each fibre of the MICRO-KLEAN filter is positively bonded in position by resin impregnation and polymerization. This provides great structural strength and complete protection against channeling, rupturing, shrinking and distortion.

Cuno's exclusive method of felting fibres permits precision control of the cartridge structure, assuring MICRO-KLEAN users of consistent, uniform filtration.

Take advantage of Cuno's unique "money-back" offer: if MICRO-KLEAN doesn't outperform any filter cartridge you have previously used, we'll send you *double* your money back. Send coupon today for MICRO-KLEAN bulletin. M.3.3

Cuno Engineering Corporation
Dept. 163-C South Vine Street, Meriden, Conn.

I'm interested in your "money-back" offer. Please send me more information on MICRO-KLEAN for ..... and enclose (fluid) your free filtration analysis form.

Name.....

Company.....

Address.....

City.....Zone....State.....

When inquiring check CP 8810 on handy form, pgs. 2-3

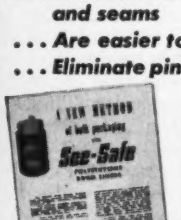
NOW!

CIRCULAR BOTTOM

Polyethylene

DRUM LINERS

- . . . New low cost
- . . . Eliminate stress and strain on liner and seams
- . . . Are easier to insert
- . . . Eliminate pinch-points and pin-holes
- . . . Material easier to get out of the drum
- . . . Eliminate mandril
- . . . MEHL Liners fit better
- . . . Last longer



FREE BOOKLET . . . describes uses and advantages of MEHL Polyethylene Plastic Drum and Carton Liners which save container costs, packing costs, tare weight charges, wasted material and salvage costs in the shipment of all sorts of liquids, semi-liquids and solids . . . write for your copy today. Also request "Guide to Military Packaging."

MEHL MANUFACTURING CO.

2057 Reading Road Cincinnati 2, Ohio

When inquiring check CP 8811 on handy form, pgs. 2-3

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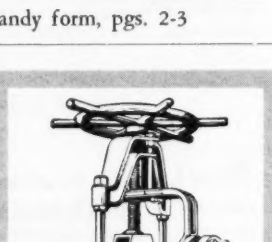
for longer wear



MASSCO-GRIGSBY

RUBBER PINCH VALVES

FOR ABRASIVE PULPS AND CORROSIVE LIQUIDS

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SIZES 1" to 12" DIA.

WRITE FOR FREE BULLETIN . . . . .

The Mine & Smelter Supply Co.

DENVER 17, COLORADO

When inquiring check CP 8812 on handy form, pgs. 2-3

NEW LITERATURE

Twist of the wrist locks couplings

Designed for use on air, water, gas, oil, hydraulic or steam lines, couplings are coupled and uncoupled in half a second — or less—according to manufacturer. Once coupled, they are securely, safely spring-locked, cannot become uncoupled accidently. In operation, line pressure expands a U-shaped gasket and provides tight seal under all working pressures form 10 to 2000 lb.

Features, specifications and engineering data are given in 8-page booklet. Cat 6500 is issued by Hose Accessories Co., Dept. CP, Lehigh Ave. and 17th St., Philadelphia 32, Pa. When inquiring specify CP 8813 on handy form, pages 2 and 3.

Measures volts, current simultaneously

Specifications and performance data on Model 601 AC Voltammeter are given in one-page bulletin. Instruments are dual, multi-range meters for simultaneous potential and current measurements. Units cover range from 0.2 to 500 amp at from 30 to 600 v.

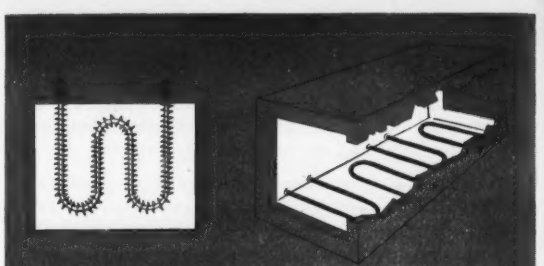
Accuracy is 2% of full scale reading and AC frequency range from 25 to 133 cycles.

Bul 6AA will be sent upon request to Robert G. Davis, Associated Research, Inc., Dept. CP, 3758 W. Belmont Ave., Chicago 18, Ill. When inquiring specify CP 8814 on handy form, pages 2 and 3.

Paint resin resists alkalis in cement

Designed to avoid cracking, peeling and general film deterioration of concrete and allied masonry surfaces, synthetic copolymer possesses high degree of chemical resistance. Ordinary vehicles saponify due to reaction with alkalis which are contained in cements.

Chemically, resin is a copolymer of butadiene and styrene and is so polymerized as to combine chemical inertness with solubility and handling characteristics necessary in a paint resin. Material is available in two vis-



G-E Calrod* Heaters For Clean, Uniform Process-Air Heating

It's easy to heat air for ventilating systems, curing, ripening or drying rooms—install fin-Calrod heaters in ducts.

Ovens for baking, drying, dehydrating, etc. are easily and accurately heated with G-E Calrod tubular or strip heaters.

G-E heaters give accurate, uniform heat and are easy to control automatically.

FOR FREE BULLETINS, "Handy Selector Guide—Calculate Your Own Air Heating Needs," GEA-5685; complete catalog of heaters and devices, GEC-1005; and "Heating Process Air," GEA-5096; call your nearby Authorized G-E Distributor or write: Section 720-75, General Electric Co., Schenectady, N. Y.

*Registered trade-mark, G.E. Co.

GENERAL ELECTRIC

720-75

When inquiring check CP 8815 on handy form, pgs. 2-3

What's

A "New Solution"?

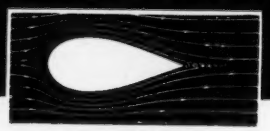
It's an article in CHEMICAL PROCESSING describing a new way of solving a tough plant operating problem. In each issue you will find specific "case histories" showing how these processing problems were solved.

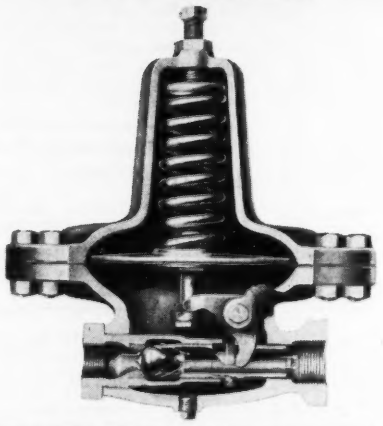
Each article states the operating problem . . . explains the process used and gives details of how problem was solved . . . shows results secured.

Take a look at "New Solutions" articles in this issue — they might suggest a "solution" for some of your tough processing problems.

THEY'LL SEE YOU THROUGH
WITH *Non-Stop Production . . .*

● Smooth, speedy, non-stop production is a vital thing today. It's a great advantage to have the dependability of operation—the smooth, even flow of steam, air, or oil—the better pressure control and greater capacity obtainable with the "1000" Valve. The Streamlined flow pattern pictured shows the valve action so important in keeping things going on the production front. Years after they have been installed, "1000" Valves perform so that you continue to realize all of the ten benefits listed below. The "1000" is known as the "NO TROUBLE" Valve.





Maximum Capacity When Needed Most • Accurate Pressure Control Under Toughest Working Conditions • Trouble-Free Service • Smooth Operation • Tight Closure Accurate Regulation • Speedier Production Results • Elimination of Failures • Constant Delivery Pressure Cost Saving Operation • No Spoilage Practically Zero in Maintenance Costs

CASH STANDARD CONTROLS.. VALVES

A. W. CASH COMPANY
DECATUR, ILLINOIS

When inquiring check CP 8816 on handy form, pgs. 2-3

cosity grades and 22 pigmented dispersions.

Formulations, features, processing, application and performance of resin are discussed in 16-page bulletin. Bul A-9421K is issued by Chemical Div., Goodyear Tire & Rubber Co., Dept. CP, Akron 16, Ohio. When inquiring specify CP 8817 on handy form, pages 2 and 3.

Treatise on rubberized abrasives

Adaptability and application of rubberized abrasives are presented, together with specifications, in eight-page catalog. Information is given about use of products in burring, smoothing, and polishing operations in various industries.

Abrasives are manufactured in wheels, points, blocks, sticks, and cones for machine or manual application. They are made in four standard "grit-types," ranging from relatively coarse to extremely fine textures. Products are said to give excellent results on hard or soft metals, plastics, ceramics, and other materials.

Cat 53 is issued by Cratex Mfg. Co., Dept. CP, 81 Natoma St., San Francisco 5, Calif. When inquiring specify CP 8818 on handy form, pages 2 and 3.

Illuminates steam gages for accurate readings

Illuminator for steam gages that permits instant and accurate gage reading of boiler water level is described in two-page leaflet.

When a gage is equipped with the mercury vapor illuminator, the water column shows blue-green. Water column is topped with a brilliant emerald green spot, to give a clear indication of its level.

Illustrations of illuminator are presented, along with information on installation and sizes. Alternate bulb is available for low pressure steam service.

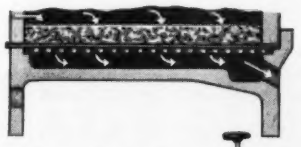
Unit 196 is published by Jerguson Gage & Valve Co., Dept. CP, 80 Fellsway, Somerville 45, Mass. When inquiring specify CP 8819 on handy form, pages 2 and 3.

HIGH FLOW RATES WITH SPARKLER FILTERS

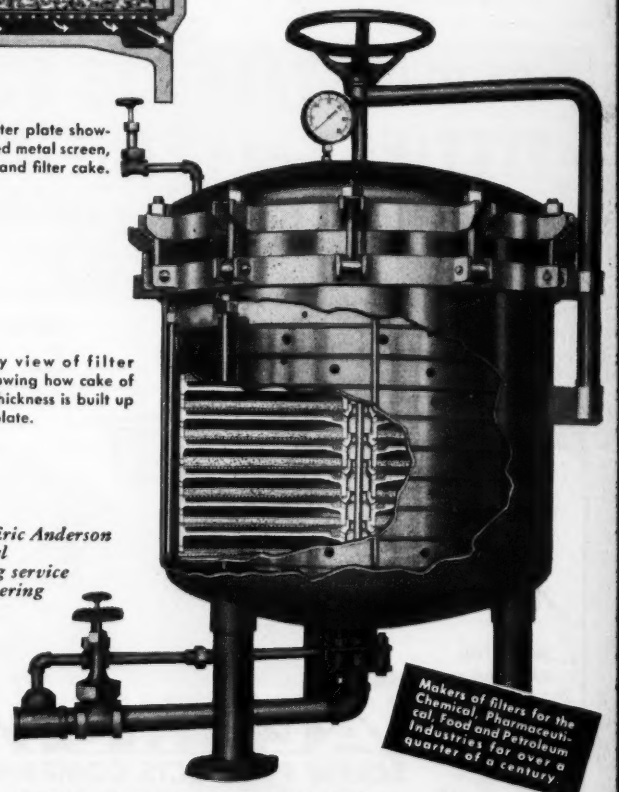
. . . frequently two to five times as high as the flow through filter septa lying in a different plane.

In Sparkler filters, friction encountered in high flow and high viscosity operations is reduced to a negligible factor by the free drainage and uniformity of cake provided by Sparkler's horizontal plate construction. Less operating pressure is needed, with the result that the cake is less dense and thus offers less resistance to flow.

Sparkler horizontal plates permit filter media to be floated into position forming a cake of uniform thickness. Only a thin precoat cake is necessary to assure brilliant clarity of the filtrate right from the start. This means maximum economy of pre-coat material and precoating recirculating time.



Section of filter plate showing perforated metal screen, filter media, and filter cake.



Cutaway view of filter plates showing how cake of uniform thickness is built up on each plate.

Write Mr. Eric Anderson for personal engineering service on your filtering problem.

SPARKLER horizontal plate FILTERS

Makers of filters for the Chemical, Pharmaceutical, Food and Petroleum Industries for over a quarter of a century.

SPARKLER MANUFACTURING COMPANY Mundelein, Ill.

When inquiring check CP 8820 on handy form, pgs. 2-3

YOU Can PAINT OVER RUSTY STEEL! without Expensive Surface Preparation

Even in Corrosive, Humid or Dirty Atmospheres, RUSTBOND PRIMER sticks to rusty and corroded steel.

Rustbond Primer contains a new vehicle which wets and acts on rust—without forming water or oxygen. Bond to steel *increases* with time. Part of the rust disappears, too.

Rustbond Primer coats sharp edges as heavily as it does flat surfaces—often more heavily. Failure of finish paint films on the sharp edges of structural steel is reduced from the usual 72% to practically zero.

Rustbond Primer itself has good corrosion resistance. Stops most undercoating corrosion on steel when steel is exposed by physical damage or skips in topcoat.

Rustbond Primer is easy to apply. Just stir and brush on like paint. Costs no more than a good red lead primer. Only one coat is required.

- Take off loose rust by wirebrushing
- Coat with RUSTBOND PRIMER
- Put on two coats of your corrosion resisting finish—the one which is otherwise satisfactory for your conditions. No intermediate coat necessary.

Vinyls won't peel from wirebrushed rusty surfaces when used with Rustbond Primer. With other primers, the steel must be sandblasted.

Bulletin 150 describes some rigid tests made of Rustbond Primer by the country's largest chemical plants.

CARBOLINE COATINGS • CEMENTS • FINISHES

CARBOLINE COMPANY
329 Thornton Avenue • St. Louis 19, Mo.

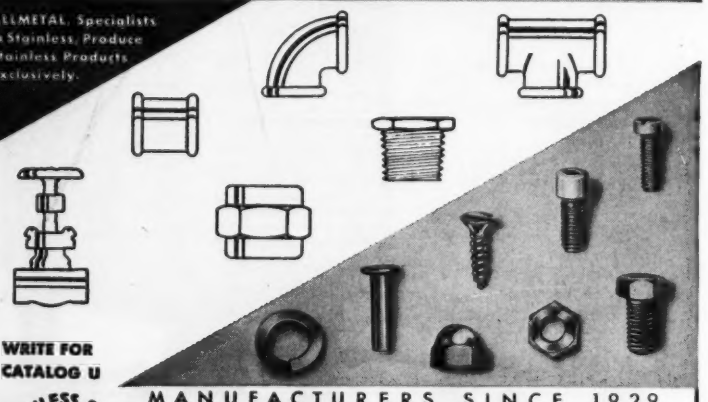
When inquiring check CP 8821 on handy form, pgs. 2-3

FOR YOUR **STAINLESS STEEL FITTINGS AND FASTENERS**

IT'S ALLMETAL FOR QUALITY AND DELIVERY

Allmetal's fasteners and fittings are stocked in types 304 and 316. Specials to order. All made right by Allmetal.

ALLMETAL, Specialists in Stainless, Produce Stainless Products Exclusively.



WRITE FOR CATALOG U

STAINLESS STEEL FASTENERS

MANUFACTURERS SINCE 1929

ALLMETAL

SCREW PRODUCTS COMPANY, INC.

33 GREENE STREET NEW YORK 13, N. Y.

When inquiring check CP 8822 on handy form, pgs. 2-3

NEW LITERATURE

Describes method for heating vats of corrosive liquids

Six-page booklet outlines principles of operation and features of unique method for heating corrosive and other types of liquids by means of hot exhaust gases from submerged combustion system. Schematic drawing and photos show details of system and convenient table summarizes suggested applications for equipment. Discussion reviews fuel and corrosion losses which may be saved by use of equipment.

"Submerged Combustion" is issued by Submerged Combustion Company of America, Inc., Dept. CP, Hammond, Ind. When inquiring specify CP 8823 on handy form, pages 2 and 3.

Describes features, gives data on temperature regulators

Manufacturer's 8-page, two-color bulletin shows large, exploded view of self-operating Series V temperature regulators (direct or reverse acting), with features highlighted. Newest addition to manufacture's line, the regulators handle steam, water, gases, and all fluids not corrosive to brass.

Principles of operations and typical uses are reviewed. Charts show specifications for both direct and reverse acting types and tables give necessary information for selecting regulators to be used with steam, gases, liquids, or vapors. Accessories to the series are also described.

Bul ST162 is issued by Farris Stacon Corp., Dept. CP, 505 Commercial Ave., Palisades Park, N. J. When inquiring specify CP 8824, pages 2 and 3.

Surface active agents are useful in metalworking industry

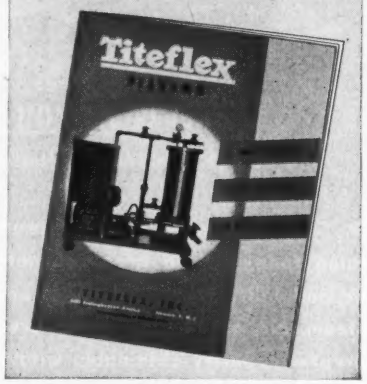
Applications of surface active agents to metalworking industry include cleaning of chrome-plated work prior to coating with a synthetic resin, addition to cleaning bath used after gas carburizing, use after cyaniding when work is to be shot-blasted, addition to pickling baths, use in rinses after pickling, cleaning before plating, and in maintenance cleaning.

Eight-page illustrated bulletin gives detailed information and case histories involving use of surface active agents in metalworking. "Surface Active Agents for the Metalworking Industry" is issued by E. F. Houghton & Co., Dept. CP, 301 W. Lehigh Ave., Philadelphia 33, Pa. When inquiring specify CP 8825, pages 2 and 3.

Correction Notice

On page 136 of December CHEMICAL PROCESSING the author of "Corrosion Testing Procedures" was erroneously listed as F. A. Chapman instead of F. A. Champion. Body of article also mentioned title as "Corrosion Testing Methods" in lieu of the above.

REDUCE FILTRATION TROUBLES!



FREE BOOKLET . . .
FREE ADVICE

If you need a new or another filter, but are wondering about filter costs, operation, and suitability for your purpose, you have two good friends—your Titeflex Engineer and the Titeflex Filter Booklet.

The Filter Booklet will show you how Titeflex Filters are constructed, and how they work.

Your Titeflex Engineer will set you straight on costs and equipment for your special needs. He's the right man to have around if you are having filtration troubles now.

Don't let any thought of obligation to us delay mailing of the coupon below today. We are low-pressure, service-minded engineers, not high-pressure promoters.

Businesses served by Titeflex Filters include . . .

Chemical	Distilling
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Titeflex — *Let Our Family of Products Help Yours*

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☐ Please send me a copy of your Free Booklet about Titeflex Filters.

☐ We need the advice of a Titeflex Filtration Engineer . . . without obligation on our part.

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TITLE_____
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ADDRESS_____
CITY_____ ZONE____ STATE____

When inquiring check CP 8826 on handy form, pgs. 2-3

Convention & Exhibit Schedule 1953

Mar. 15-19. American Chemical Society, 123rd National Meeting, Los Angeles, Calif.

Mar. 17-20. National Association of Corrosion Engineers, Protective Coating Symposium, Hotel Sherman, Chicago, Illinois.

Mar. 23-24. Commercial Chemical Development Ass'n, annual open meeting, Hotel Statler, New York, N. Y.

Apr. 13-15. American Society of Lubrication Engineers, Annual Meeting and Exhibit, Hotel Statler, Boston, Mass.

Apr. 20-23. American Management Association, 22nd National Packaging Exposition, Navy Pier, Chicago, Ill.

Apr. 21. Association of Consulting Chemist and Chemical Engineers, Inc., Symposium, Hotel Belmont Plaza, New York, N. Y.

May 1. American Association of Spectrographers, Symposium, Chicago, Illinois.

May 4-6. American Oil Chemists' Society, 44th Annual Meeting, Roosevelt Hotel, New Orleans, Louisiana.

May 5. American Institute of Chemical Engineers, Fourth Annual All Day Symposium, Essex House, Newark, N. J.

May 9-15. The Society of the Plastics Industry, Inc., Annual Meeting and Conference, Cruise to Bermuda.

May 14-23. International Petroleum Exposition, 30th Anniversary, Tulsa, Oklahoma.

May 18-22. The Material Handling Institute, Inc., Fifth National Materials Handling Exposition, Convention Hall, Philadelphia, Pa.

May 19-22. Electrical Manufacturer's Representatives Association of Michigan, Inc., Electrical Exhibition, Michigan State Fair Grounds, Detroit, Michigan.

June 15-19. Exposition of Basic Materials for Industry, Grand Central Palace, New York, N. Y.

June 16-19. American Welding Society, Welding & Allied Industry Exposition, Shamrock Hotel, Houston, Tex.

Sept. 6-11. American Chemical Society, 124th National Meeting, Chicago, Ill.

Sept. 13-16. American Institute of Chemical Engineers, Fairmont and Mark Hopkins Hotels, San Francisco, Calif.

Sept. 17-19. American Association of Textile Chemists and Colorists, annual convention, Conrad Hilton Hotel, Chicago, Ill.

Sept. 21-25. Instrument Society of America, Eighth National Instrument Conference and Exhibit, Chicago, Illinois.

Oct. 26-27. National Association of Suggestion Systems, annual meeting, William Penn Hotel, Pittsburgh, Pa.

Oct. 27. Association of Consulting Chemists and Chemical Engineers, Inc., 25th Anniversary Meeting, Hotel Belmont Plaza, New York, N. Y.

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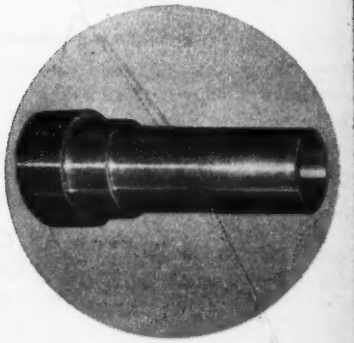

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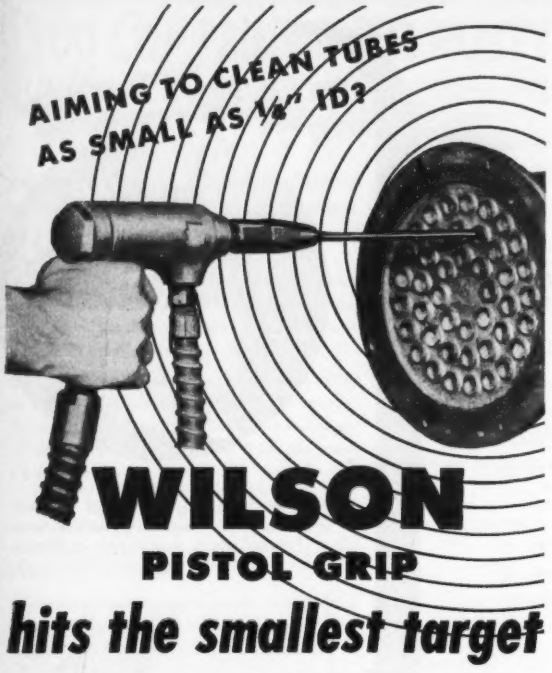

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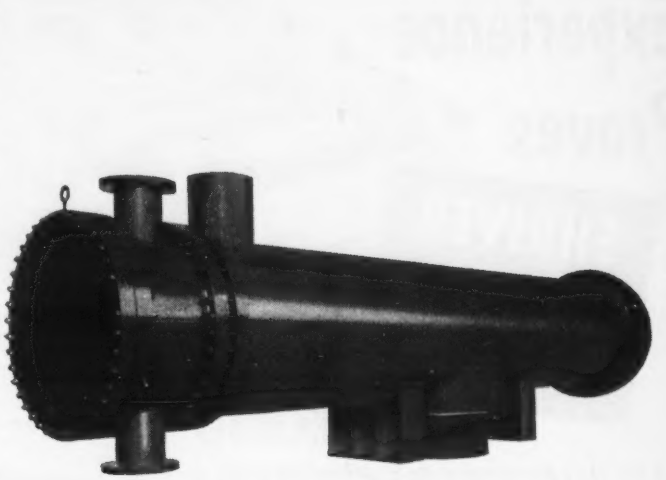

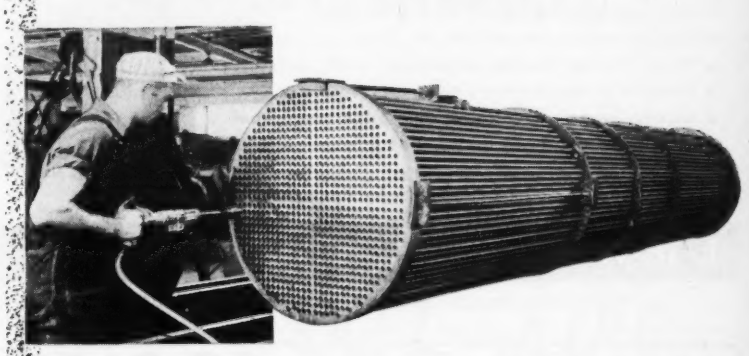

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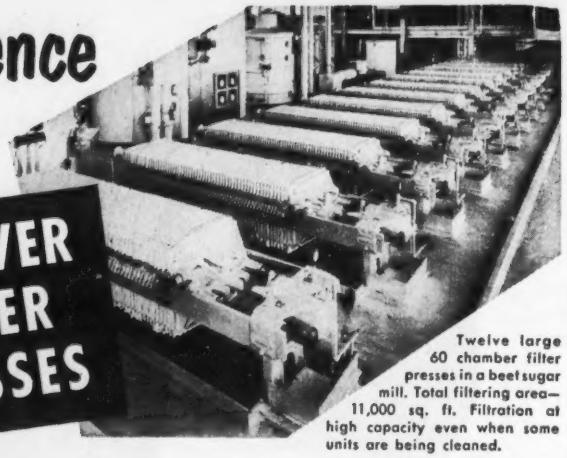

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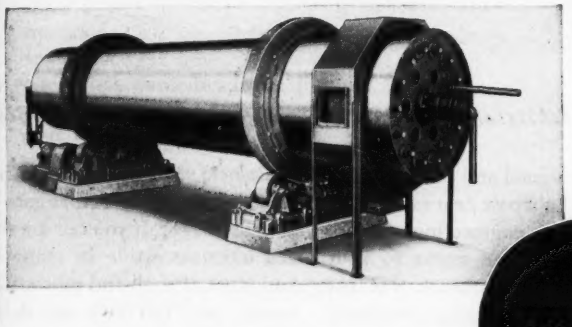

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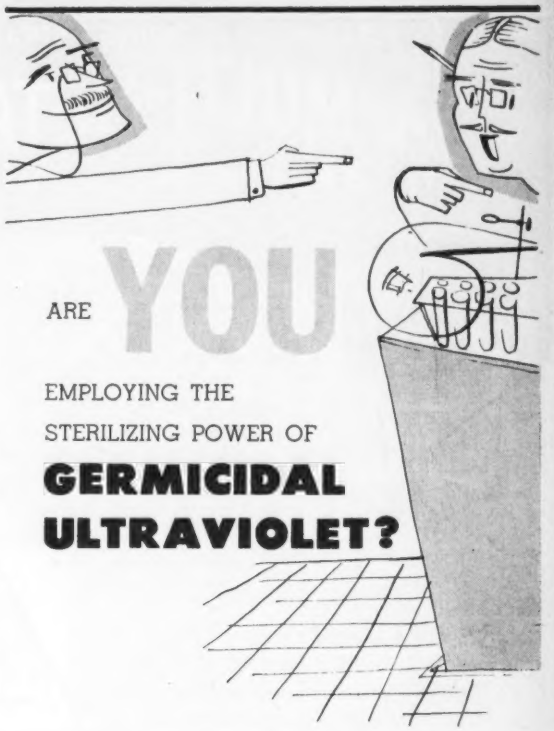

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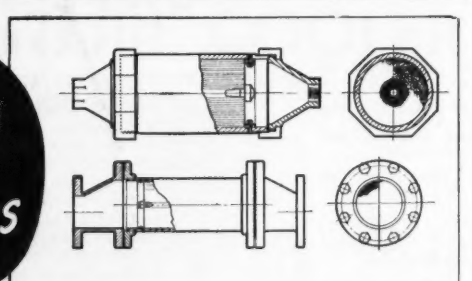

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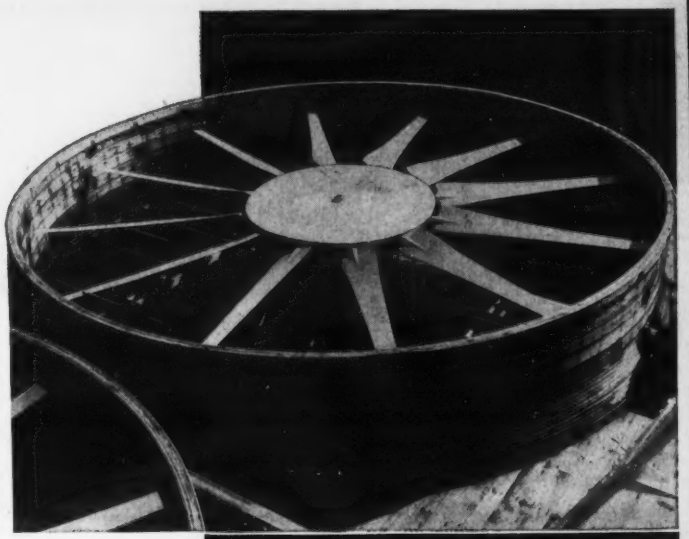
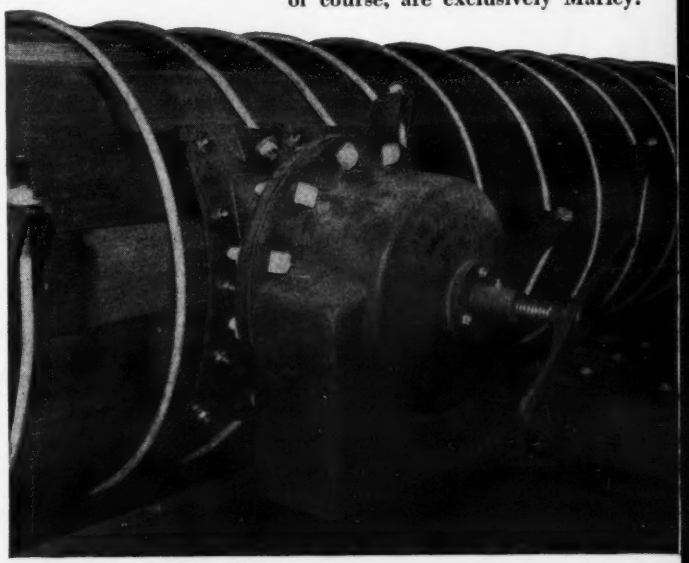
exclusive Marley features that mean PERMANENT PERFORMANCE



Improvement of performance and service life of the vital elements of cooling towers is a continuing project of Marley research and engineering. The results of this effort set the pace for the entire industry.

Here are four advanced features that are incorporated into current Marley production.* They are distinct achievements in cooling tower design, and, of course, are exclusively Marley.



Marley Multi-Blade Fans –

These fans are aerodynamically correct in design to move air in volume efficiently. Their further accomplishment is to remove pulsation with its damaging vibration.

Marley Patented Laminated Fan Cylinders –

Built of multiple plies of redwood, the Laminated Fan Cylinder is completely non-corrosive and vibration resistant. Field service proves its permanence.

Marley Redwood Pipe –

This header pipe is carefully prefabricated in Marley's wood fabrication plant for cooling towers (largest in the world). Its perfect fit and strong, adjustable steel bands on close centers assure its long life. On the job it is erected easily, quickly.

Marley Flow Control Valve –

Marley flow control valves insure equal distribution of water to each cell and effectively handle any quantity of water from full basin capacity to complete shutdown.

Ask your Marley Sales Engineer (in fifty cities) for detailed information about these achievements that have maintained Marley leadership.

*Any cooling tower can be modernized with Marley design features.

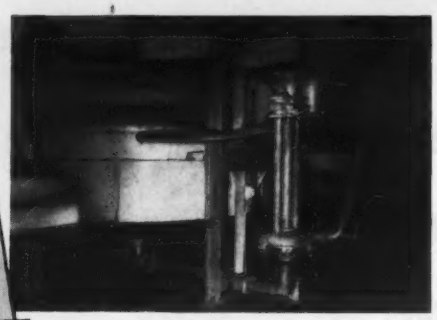
MARLEY

The Marley Company

Kansas City, Missouri

When inquiring check CP 8837 on handy form, pgs. 2-3

This NEW *Nagle* "TV" PUMP is NO "WALLFLOWER"



IT'S prim and clean, and designed to mount on wall or side of a tank or sump, but it's no "wallflower." You'll find it in the thick of things! A single stage, bottom entrance, vertical shaft, dry pit pump for handling abrasive mixtures and corrosive liquids and slurries — pumps anything that will flow. The Nagle type "TV" gives you:

- Freedom from leakage—clean floors assured
- No stuffing box
- No submerged bearing
- Sizes from ¾" to 10"
- Capacities to 4,000 g.p.m.

NAGLE PUMPS

NAGLE PUMPS, INC.
1247 Center Ave., Chicago Heights, Ill.

PUMPS FOR ABRASIVE AND CORROSIVE APPLICATIONS

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INSTANT SETTING CONCRETE FLOOR PATCH

TEST IT ON TRIAL OFFER

TOUGH AS NAILS! FAST!

Repair broken factory floors without the usual traffic tie-up. Simply shovel INSTANT-USE into hole or rut — tamp smooth — truck over! No waiting! INSTANT-USE bonds tight to old concrete — right up to a feather edge. It's tough. Wears like iron. Won't crack or crumble. Install complete overlay where floors are badly chewed up. Used indoors or out. Immediate shipment.

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The Advantages of Teflon

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Moderate Cost

Chemically inert, heat-resistant, anti-hesive Teflon has solved many tough packing problems. But under certain conditions (ambient temperature, etc.) Teflon's cold-flow characteristics have caused trouble. The solution to the cold-flow problem is Flexrock's #401 braid-over-braid white asbestos packing impregnated *throughout* with Teflon. #401 offers solid Teflon's advantages plus superior resiliency, permitting a tight, lasting seal at low gland pressure *against acids, alkalis and solvents.* #401 is versatile, moderately priced, helps eliminate the need for expensive, machined Teflon rings. Stock it for all applications demanding absolute *non-corrosion, non-contamination.* Will never "seize" a shaft or spindle; serviceable from —100°F. to 500°F. Furnished in continuous lengths, square cross-section, from ⅛" to 1" by 1/16" increments.

A Complete line of Teflon—

Packing
Gaskets
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Special Shapes

All types of solid or impregnated Teflon packing in endless ring or continuous braided construction. Solid Teflon or Teflon-jacketed gaskets. Teflon sheets, tape, cylinders, rods, tubing, bars. Also, special shapes.

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PHILADELPHIA 4, PA.

Mechanical Packing Division
FLEXROCK COMPANY
3611 Filbert Street, Philadelphia 4, Pa.

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City _____ Zone _____ State _____

Please clip coupon to Company letterhead

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"That's Interesting"

World's first moving rubber sidewalk

Chicago's Museum of Science and Industry gained the world's first moving rubber sidewalk, which conveys visitors into the B. F. Goodrich Company's exhibit in the museum. This means of transportation has been suggested as a possible solution to the problem of moving a large number of people at a continuous rate through conjested areas.

Also prominent at their exhibit was a 60′ high guillotine on which visitors try to "execute" a puncture sealing tubeless tire with a 30-lb blade. The tire takes about 150 impacts on the same spot each day.

Comic book discusses serious subject

The fifth in a series of booklets, published in the interest of better economic education in America, deals with productivity. Titled "A Better Life for You" it tells how machines put more men to work, increase production, lower costs, and contribute to higher wages, shorter hours, more profits and more jobs.

Like earlier booklets in this series it follows the comic book style and it is printed in full color. Bemis Bros. Bag Co., Dept. CP, 408 Pine St., St. Louis 2, Mo., is promoting these booklets and will furnish information about program. Sample copies and price lists may be obtained by writing to Harvey Publications, Inc., Comics Div., 1860 Broadway, New York 23, New York.

Acrylonitrile to Zirconium

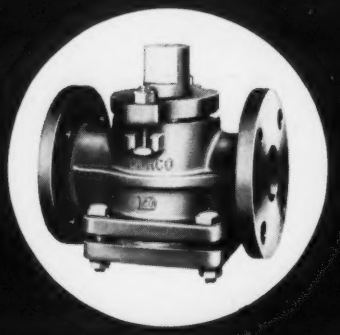
(*Continued from page* 4)

sent additional opportunities for editorial investigation and comment. Recent conversations with producers disclosed information which will be made available in future issues of CHEMICAL PROCESSING.

Editorial field trips and other contacts are furnishing background information and technical know-how which will result in articles for future issues of CHEMICAL PROCESSING. Perhaps presentation of this information will implement further developments in the chemical materials field and introduction of new products — from amines to synthetic fibers.

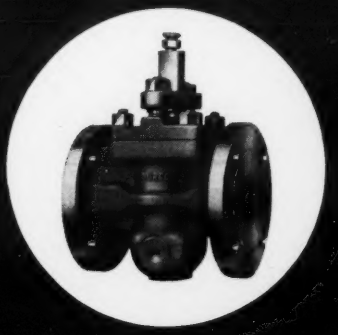
For more information on product at right, specify CP 8841 . . . see information request blank between pages 2 - 3.

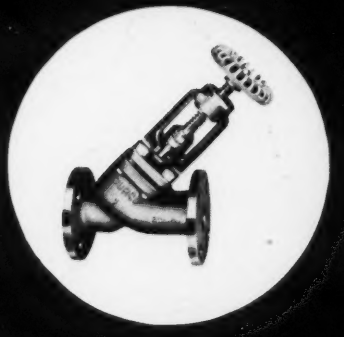
DURCO ALLOY VALVES



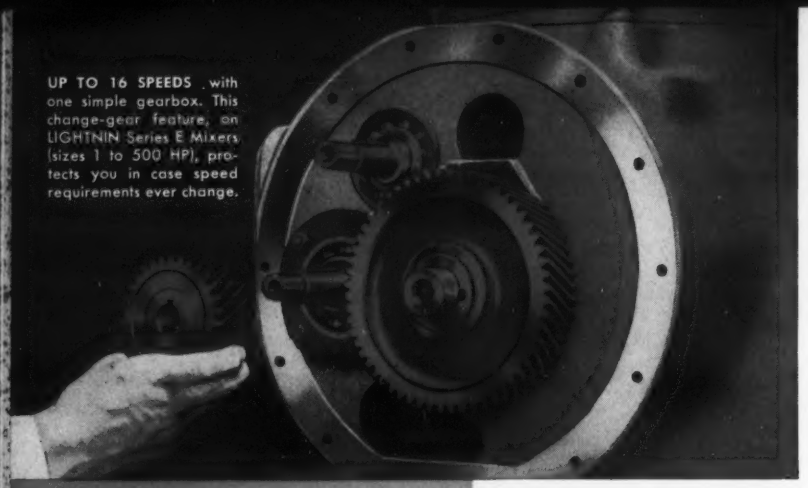
The Duriron Company, Inc. offers several types of chemical service valves for your corrosive applications. For example, the Durco Type F valve is regularly stocked in Durimet 20, 18-8-S-Mo and Monel; and supplied on special order in other alloys to answer your corrosive handling problems. For 40 years The Duriron Company has supplied valves and other corrosion resisting equipment to the chemical industry.

DURCO
CORROSION RESISTING ALLOYS & EQUIPMENT





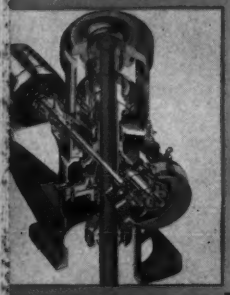
THE DURIRON COMPANY, Inc.
DAYTON, OHIO



UP TO 16 SPEEDS with one simple gearbox. This change-gear feature, on LIGHTNIN Series E Mixers (sizes 1 to 500 HP), protects you in case speed requirements ever change.

If you're tired of throwing mixers away,

this is for you



SHAFTS OF DIFFERENT SIZES can be used at any time. Mixer shaft is suspended independent of gearing. Gears fully protected against normal and abnormal shaft flexure. A feature of Series TE turbine and paddle mixers for open and closed tanks.

EASIER TO REPACK than ever before. A feature of LIGHTNIN Series SE side entering mixers (1 to 25 HP). No wrenches needed. Your choice of packed stuffing boxes or mechanical seals to fit the job.

LIGHTNIN PORTABLE MIXERS fit any open tank; can be supplied with interchangeable shafts and propellers to do different mixing jobs. Thirty models to choose from. Sizes ⅛ to 3 HP.

GET THESE HELPFUL LIGHTNIN CATALOGS

This library of mixing information is yours for the asking. Catalogs contain helpful data on impeller selection; sizing; best type of vessel; valuable installation and operating hints; complete description of LIGHTNIN Mixers.

MIXCO fluid mixing specialists

Today's high replacement costs make it a "must" for you to choose fluid mixing equipment that *stands up* under heavy duty—and *stays flexible,* to meet process changes.

You get that kind of service from LIGHTNIN Mixers. Many have been on the job 20 years and more.

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MIXING EQUIPMENT Co., Inc.

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